Causation in the Law of the World Trade Organization

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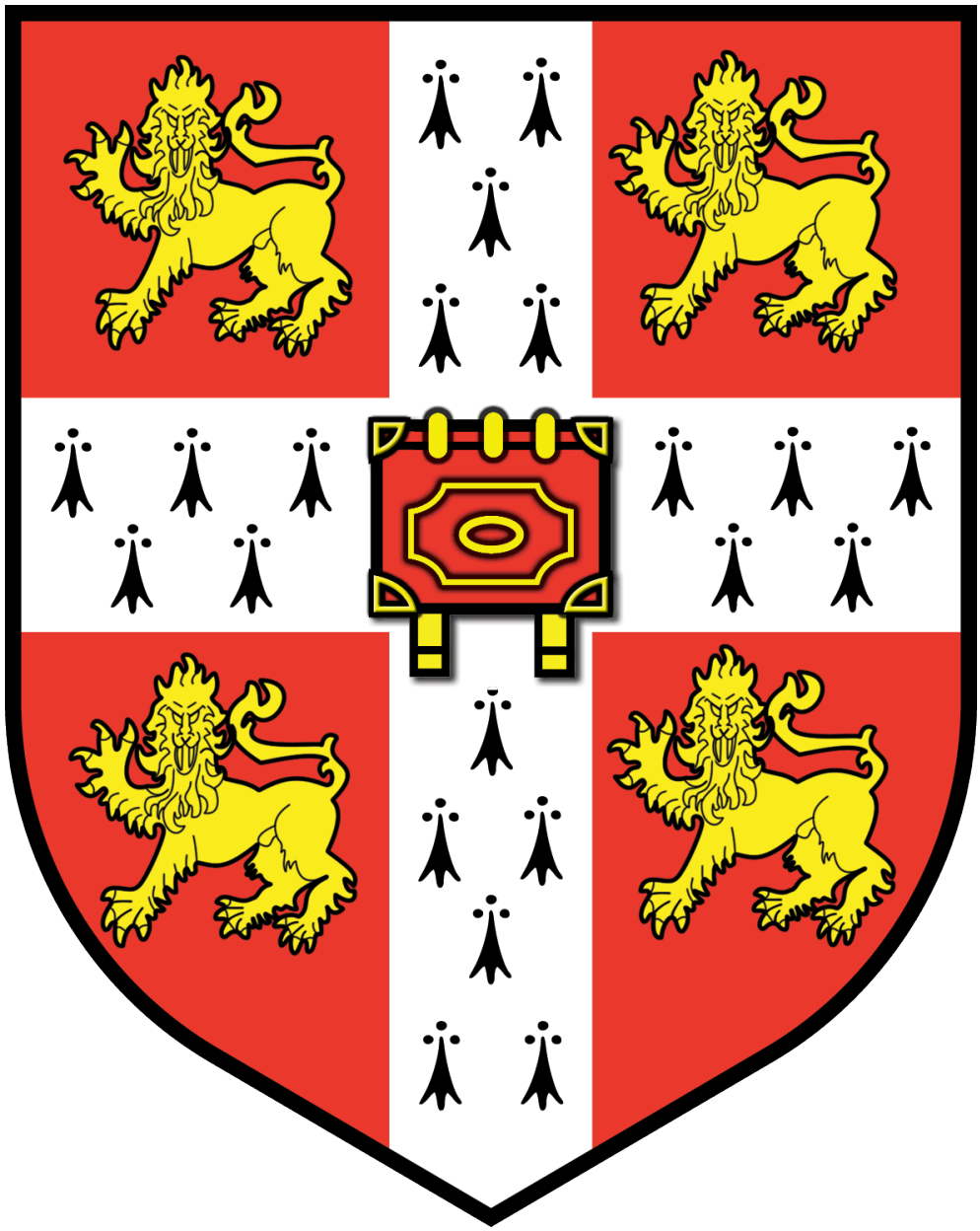

Abstract

The law of the World Trade Organization (WTO) both explicitly and implicitly requires that a determination of causation be made at a number of points. In several of the WTO covered agreements, an important part of making a determination about causation involves separating those factors that are causative from those that are immaterial to the outcome in question (this process of separation is known as a 'non-attribution analysis'). This thesis argues that there are six parts of the law of the WTO that require, either explicitly or implicitly, that a causation and non-attribution analysis be undertaken. These are: (1) Safeguard Measures (Articles 2.1 and 4.2(a) and (b) of the *Agreement on Safeguards*[1]); (2) Anti-Dumping measures (Articles 3.1 and 3.5 of the *Anti-Dumping Agreement*[2]); (3) Countervailing Duties (Article 15.5 of the *Subsidies and Countervailing Measures Agreement*[3] (SCM Agreement)); (4) Serious prejudice (Articles 5(c) and 6.3 of the SCM Agreement); (5) the relationship between a measure and its policy objective (Article XX of the *General Agreement on Tariffs and Trade*[4] and Article XIV of the *General Agreement on Trade in Services*[5]); and (6) the relationship between a responding Member's failure to comply with a DSB ruling and the complainant Member's level of nullification and impairment (Articles 22.6 of the *Understanding on Rules and Procedures Governing the Settlement of Disputes*[6] and 4.10 of the SCM Agreement). This thesis will first examine the current approach in the jurisprudence to analysing causation and non-attribution in these parts of the law of the WTO. To that end, it will suggest that there is a trend in the current jurisprudence to attempt to make an *a priori* inference about the effects of a cause from the nature of the cause itself. This thesis will suggest that this approach reflects a misconception of causation, and it will propose an alternative, three-part methodology for interrogating causation based on the use of econometric analysis, which has been developed from guidance given by the Appellate Body in *US—Wheat Gluten*.[7]

[1] *Agreement on Safeguards*, LT/UR/A-1A/8 (signed 15 April 1994, entered into force 1 January 1995).
[2] *Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994*, LT/UR/A-1A/3 (signed 15 April 1994, entered into force 1 January 1995).
[3] *Agreement on Subsidies and Countervailing Measures*, LT/UR/A-1A/9 (signed 15 April 1994, entered into force 1 January 1995).
[4] *General Agreement on Tariffs and Trade 1994*, LT/UR/A-1A/1/GATT/1 (signed 15 April 1994, entered into force 1 January 1995).
[5] *General Agreement on Trade in Services,* LT/UR/A-1B/S/1 (signed 15 April 1994, entered into force 1 January 1995).
[6] *Understanding on Rules and Procedures Governing the Settlement of Disputes*, LT/UR/A-2/DS/U/1 (signed 15 April 1994, entered into force 1 January 1995).
[7] WTO, *United States: Definitive Safeguard Measures on Imports of Wheat Gluten from the European Communities—Report of the Appellate Body* (22 December 2000) WT/DS166/AB/R [69].

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List of Abbreviations

AB	Appellate Body
AD	Antidumping
CAFC	United States Court of Appeals for the Federal Circuit
CVD or CVDs	Countervailing Duties
DSU	Dispute Settlement Understanding
EC	European Communities
EU	European Union
GATS	General Agreement on Trade in Services
GATT 1994	General Agreement on Tariffs and Trade 1994
INUS	Insufficient but necessary part of an unnecessary but sufficient set
LRA	Linear Regression Analysis
NESS	Necessary Element of a Sufficient Set
SCM	Subsidies and Countervailing Measures
SST	Statistical Significance Testing
US	United States
WTO	World Trade Organization

List of Figures

List of Cases

Court of Justice of the European Union

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Understanding on Rules and Procedures Governing the Settlement of Disputes, LT/UR/A-2/DS/U/1 (signed 15 April 1994, entered into force 1 January 1995)

List of Journal Abbreviations

Abbreviation	Journal name
AJIL	*American Journal of International Law*
Am Phil Q	*American Philosophical Quarterly*
Brooklyn L Rev	*Brooklyn Law Review*
California L Rev	*California Law Review*
Camb LJ	*Cambridge Law Journal*
Contemp Pol Issues	*Contemporary Policy Issues*
Econ Bull	*Economics Bulletin*
Fordham L Rev	*Fordham Law Review*
Georgetown J Int L	*Georgetown Journal of International Law*
GTCJ	*Global Trade & Customs Journal*
Harvard L Rev	*Harvard Law Review*
Int'l & Comp LQ	*International & Comparative Law Quarterly*
Int Lawyer	*International Lawyer*
Int Rev Law Econ	*International Review of Law & Economics*
J Law & Econ	*The Journal of Law & Economics*
JFE	*Journal of Financial Economics*
JIEL	*Journal of International Economic Law*
J Ind Econ	*The Journal of Industrial Economics*
J Int Econ	*Journal of International Economics*
J Phil	*The Journal of Philosophy*
JWT	*Journal of World Trade*
Legal Stud	*The Journal of Legal Studies*
MJIEL	*Manchester Journal of International Economic Law*
Nw J Int'l L & Bus	*Northwestern Journal of International Law & Business*
Oxford J Legal Stud	*Oxford Journal of Legal Studies*
Phil Q	*The Philosophical Quarterly*
Phil Sci	*Philosophy of Science*
Rev World Econ	*Review of World Economics*
Stud Hist Philos	*Studies in the History of Philosophy & Science*
U Chi L Rev	*The University of Chicago Law Review*
Wash L Rev	*Washington Law Review*
WTR	*World Trade Review*

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Introduction

[1.0] Overview of Thesis

> There is no question, which on account of its importance, as well as difficulty, has caus'd more disputes both among antient and modern philosophers, than this concerning the efficacy of causes, or that quality which makes them be follow'd by their effects.[8]

Despite the profound difficulty associated with determining causation, the need to do so is nonetheless deeply embedded in all legal systems, and the law of the WTO is no exception. Legal systems are generally interested in the concept of causation for three practical reasons.[9] The first is *attributive*—that is, the law draws on causal principles in order to ascertain whether responsibility should be fixed to an agent on account of his, her or its actions or omissions.[10] The second use is *explanatory*, in the sense that the law attempts to determine how earlier conditions may have led to a later state of affairs.[11] Third and finally, the law requires causation to make *predictions* about the likely future contribution of a condition to a state of affairs.[12] Whilst most areas of law are primarily interested in causation for its assistance with attributing responsibility to an agent (eg, negligence law, criminal law and contract law), it will be argued that WTO law draws on causation to assist with each one of the three rationales listed above. It will be seen that Chapters II, III and V of this thesis are interested in causation for its attributive potential, whilst Chapter IV will draw on causation for its explanatory and predictive capacities. Due to the greater range of reasons for drawing on causation, it follows that causation in WTO law requires a greater arsenal of causal tests than some other areas of law for interrogating causation. As such, this thesis will employ both non-quantitative causal tests aimed at attributing responsibility (such as the traditional *sine qua non* and weak necessity/strong sufficiency tests) as well as quantitative tests (such as the Statistical Significance Test and Linear Regression Analysis). These causal tests will be detailed in Chapter I of this thesis.

Causation in WTO law is distinctive for a second reason—that is, it involves drawing causal links with respect to something as complex and multi-faceted as financial markets and international trade flows. As such, at several points the agreements in WTO law require a fact-finder to separate the causal factor being interrogated from potentially confounding factors that may also have contributed to the effect in question. This process of distinguishing the causal factor in question from other potentially confounding factors is called a non-attribution analysis. WTO law explicitly requires a non-attribution analysis to be undertaken at

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[8] David Hume, *An Enquiry Concerning Human Understanding*, LA Selby-Bigge (ed), (3rd ed, OUP 1975), Book I, Section xiv.
[9] Antony Honoré, 'Causation in the Law,' *The Stanford Encyclopedia of Philosophy* (Winter 2010 Edition), Edward N Zalta (ed), <http://plato.stanford.edu/archives/win2010/entries/causation-law/> accessed 26 September 2015.
[10] ibid.
[11] ibid.
[12] ibid.

several points, whilst at others, this thesis suggests that it may be implied by the nature of the causal analysis in question.

In short, those parts of WTO law with which this thesis is concerned require causation to be found between factors at the same time as they require causation between factors to be excluded. In this sense, the causation analyses under examination in this thesis have both positive and negative features. This dual character means that any useful methodology for determining causation and non-attribution must be able reliably to discriminate between those factors that were causative and those that were immaterial. This thesis will discuss six different parts of WTO law that all have this dual character. The first three, to be discussed in Chapter II, all relate to trade remedies. The first trade remedy to be discussed is safeguard measures (Articles 2.1 and 4.2(a) and (b) of the Safeguards Agreement[13]), which allow a WTO Member temporarily to protect a domestic industry from an increase in imports of a product if those imports are causing, or threatening to cause, serious injury to that industry. Next, this thesis will consider antidumping measures (Articles 3.1 and 3.5 of the Antidumping Agreement[14]), which are measures that a Member may impose on foreign imports that are priced below fair market value and are causing harm to the Member's domestic industry. Third, countervailing duties (Article 15.5 of the SCM Agreement[15]) will be discussed—namely, duties that a Member can impose on a foreign Member's exports if the exports have been found to have been subsidised and to have caused injury to domestic producers in the importing country.

Chapter III will discuss non-attribution and causation in the context of serious prejudice (Articles 5(c) and 6.3 of the SCM Agreement), which arises where a foreign Member's subsidy causes adverse effects on another Member's trade interests in relation to a particular product in a specified market. Chapter IV concerns Articles XX GATT and XIV GATS, which may exempt a Member's measure from the disciplines of the GATT or GATS respectively under certain circumstances, one of which is that the measure is found effectively to achieve its intended policy objective. Chapter IV will discuss how non-attribution and causation analyses might be used in order to interrogate the relationship between a measure and its policy objective for the purposes of Articles XX GATT[16] and XIV GATS.[17] Chapter V discusses Articles 22.6 DSU[18] and 4.10 SCM Agreement, which permit Member A to bring retaliatory measures against Member B if Member B refuses to comply with a DSB ruling. In order to calculate the level of retaliation owed to Member A, the adjudicators must calculate the likely level of nullification and impairment caused, whilst

[13] *Agreement on Safeguards*, LT/UR/A-1A/8 (signed 15 April 1994, entered into force 1 January 1995) (Safeguards Agreement).
[14] *Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994*, LT/UR/A-1A/3 (signed 15 April 1994, entered into force 1 January 1995) (Antidumping Agreement or AD Agreement).
[15] *Agreement on Subsidies and Countervailing Measures*, LT/UR/A-1A/9 (signed 15 April 1994, entered into force 1 January 1995) (SCM Agreement).
[16] *General Agreement on Tariffs and Trade 1994*, LT/UR/A-1A/1/GATT/1 (signed 15 April 1994, entered into force 1 January 1995) (GATT 1994).
[17] *General Agreement on Trade in Services,* LT/UR/A-1B/S/1 (signed 15 April 1994, entered into force 1 January 1995) (GATS).
[18] *Understanding on Rules and Procedures Governing the Settlement of Disputes*, LT/UR/A-2/DS/U/1 (signed 15 April 1994, entered into force 1 January 1995) (DSU).

also taking account of potentially confounding factors. Chapter V argues that non-attribution and causation analyses might be used to interrogate the relationship between a responding Member's failure to comply with a DSB ruling and the complainant Member's level of nullification and impairment. The jurisprudence has not discussed the need to perform non-attribution and causation analyses with respect to the areas of law discussed in Chapters IV and V; and so, Chapters IV and V will argue that the need to do so may be implied.

It will be seen in Chapters III, IV and V that some parts of the current jurisprudence attempt to circumvent non-attribution and causation analyses. In doing so, common to all such attempts is a tendency to try to infer the effects of a cause from an *a priori* judgment about the nature of that cause. To put this another way, at various points the current jurisprudence attempts to presume the effect that a cause will have without actually interrogating that effect empirically. This means that an unsubstantiated presumption becomes the basis for drawing a causal link. Whilst this tendency manifests in different ways in Chapters III, IV and V, at the root of each of them is a fundamental logical fallacy which results in reasoning that not only misunderstands the nature of causation, but also results in flawed conclusions. These logical fallacies will be pointed out as and when they occur in each of the four chapters that discuss WTO law.

Due to the shortcomings of this approach based on *a priori* judgments, this thesis will put forward a methodology for analysing causation and non-attribution that draws on econometric analysis. The advantage of using an approach that relies on econometric analysis is that it actually interrogates the effects of the causes, instead of presuming them. The methodology is derived ultimately from paragraph [69] of *US—Wheat Gluten*, in which the AB set out a three-step process for performing a non-attribution and causation analysis in relation to the Safeguards Agreement.[19] This process is as follows: (1) authorities must separate the injurious effects of increased imports from the injurious effects produced by potentially confounding factors; (2) authorities must then attribute to imports the harm they alone have produced before attributing to potentially confounding factors the harm that they have occasioned in turn; and (3) finally, authorities should determine whether there is a causal link between imports and 'serious injury or threat thereof'; and if so, whether such a causal link involves a 'genuine and substantial relationship of cause and effect' between these two elements. This three-step methodology will be called the Tripartite Non-Attribution/Causation Analysis, and its explication and application form the heart of this thesis. That is, whilst the Tripartite Non-Attribution/Causation Analysis was developed by the AB in relation to safeguard measures, this thesis will suggest that it may also usefully be applied to those six areas of WTO law that were identified above as requiring non-attribution and causation analyses. Indeed, each chapter of this thesis that discusses WTO law draws on the Tripartite Non-Attribution/Causation Analysis.

One of the chief advantages of the Tripartite Non-Attribution/Causation Analysis is that it tends to result in a genuine non-attribution analysis. It will be seen that, in the absence of the Tripartite Non-

[19] WTO, *United States: Definitive Safeguard Measures on Imports of Wheat Gluten from the European Communities—Report of the Appellate Body* (22 December 2000) WT/DS166/AB/R [69].

Attribution/Causation Analysis, the jurisprudence has sometimes conducted a non-attribution analysis that is tokenistic or even performed *after* the causation analysis. The result is that fact-finders are not in a position to assess the *interaction* between the causal factor in question (eg, imports) and potentially confounding factors, leading to a causal analysis of dubious reliability. The Tripartite Non-Attribution/Causation Analysis, however, performs the non-attribution *prior* to the causation analysis, which allows confounding factors to be identified and disaggregated from the causal factor in question.

A second benefit of the Tripartite Non-Attribution/Causation Analysis is that it brings consistency to the non-attribution and causation analyses, which, in turn, tends to promote greater legal certainty. Chapter II discusses the requirement imposed upon a domestic competent authority to draw a causal link between imports and harm to an industry. Each domestic competent authority is free to devise its own methodology, which has resulted in a lack of consistency and transparency between Members. Similarly, the jurisprudence in Chapter III evidences a degree of confusion between cases, particularly with respect to how the non-attribution analysis should be performed. The Tripartite Non-Attribution/Causation Analysis offers a way to bring greater clarity and consistency to a finding of serious prejudice. Both Chapters IV and V concern provisions that do not explicitly require non-attribution and causation analyses, and, as such, the jurisprudence evidences a degree of inconsistency. This inconsistency could be resolved by having a more formalised approach, in the manner of the Tripartite Non-Attribution/Causation Analysis. Once again, such a formalised approach would allow Members more easily to predict how the arbitrators would deal with each case. It is to a more detailed overview of the contents of each chapter that this thesis now turns.

[2.0] Outline of Chapters

Chapter I sets out some basic causal theory and concepts that are important for understanding causation and the related concept of non-attribution. It also introduces some causal tests that will be applied in later chapters. In particular, it explains the concepts of necessity and sufficiency as well as non-quantitative causal tests that draw on them—that is, the *sine qua non* test and the weak necessity/strong sufficiency tests, as well as the strengths and weaknesses of those tests. Further, Chapter I sets out two quantitative approaches to interrogating causation that will be applied in Chapter IV of this thesis—namely, the Statistical Significance Test and Linear Regression Analysis. Chapter I does not attempt to provide any kind of comprehensive overview of the theory of causation in the law generally or even to detail a fraction of the causal tests that have been developed for interrogating causation. Its far more modest goal is simply to explain the main causal tests and concepts on which the subsequent chapters will continually draw.

Chapter II discusses those provisions that relate to determining causation in relation to safeguard measures, antidumping measures and countervailing duties (collectively, 'trade remedies'). Whilst each of these trade remedies seeks to protect a Member's industry in different ways, each fundamentally requires a Member to show that imports have caused its industry harm. The relevant provisions of each of the agreements

explicitly require both non-attribution and causation analyses to be performed, but the way in which these are conducted is largely left to the discretion of domestic competent authorities. Although there has been a significant amount written about the economic assumptions embedded into the determination of injury in the trade remedies provisions[20] as well as their historical development,[21] these discussions fall outside the purview of Chapter II. There have been a number of publications that have proposed causal tests to assist with determining injury in respect of each of the trade remedies agreements.[22] Chapter II will discuss these proposals, as well as one methodology used by domestic competent authorities called the 'breaking the causal link' approach before considering some drawbacks of this approach. The chapter will then consider how the Tripartite Non-Attribution/Causation Analysis that was suggested by the AB in *US—Wheat Gluten* can serve as an alternative approach. The Tripartite Non-Attribution/Causation Analysis draws on some econometric tests that have been developed largely in the context of trade remedy investigations involving section 201 of the US 1974 Trade Act.[23]

Chapter III is concerned with making a determination of serious prejudice under the SCM Agreement. Like a finding of 'injury' under the trade remedies chapter, a determination of serious prejudice explicitly requires both a non-attribution and a causation analysis. This means that a fact-finder must make a determination as to whether the market phenomenon is caused by subsidies, and to that end, must be careful not to attribute responsibility to subsidies for those things that were, in fact, caused by potentially confounding factors. Those provisions relating to non-attribution and causation in the context of a serious prejudice finding are less precise than those contained in the trade remedies agreements. As such, the jurisprudence has shown a fair degree of inconsistency in the way in which it has interpreted non-attribution and causation for the purpose of making a finding of serious prejudice, and sometimes even a fundamental misconception

[20] See generally, Alan O Sykes, 'The Causation Requirement and "Non-Attribution"' in *The WTO Safeguards Agreement: A Commentary* (OUP 2006); Alan O Sykes, 'The Safeguards Mess: A Critique of WTO Jurisprudence' (2003) 2(3) WTR 261; Fernando Piérola, 'Causal Link' in *The Challenge of Safeguards in the WTO* (CUP 2014); Kenneth Kelly, 'An Analysis of Causality in Escape Clause Cases' (1988) 37(2) J Ind Econ 187; Robert S Pindyck and Julio J Rotemberg, 'Are Imports to Blame? Attribution of Injury under the 1974 Trade Act' (1987) 30 J Law & Econ 101; Alan O Sykes, 'The Economics of Injury in Antidumping Countervailing Duty Investigations' (1996) 16(1) Int Rev Law Econ 5; and Ronald A Cass and Michael S Knoll, 'The Economics of "Injury"' in Jagdeep S Bhandari and Alan O Sykes (eds), *Antidumping and Countervailing Duty Cases: A Reply to Professor Sykes, Economic Dimensions in International Law: Comparative and Empirical Perspectives* (CUP 1997); and Richard D Boltuck, 'An Economic Analysis of Dumping' (1987) 21(5) JWT 45.

[21] Simon Lacey, 'Causal Link, Non-Attribution and Contingency Protection in the WTO' (2002) Working Paper, December 2002, 37, <https://ssrn.com/abstract=1135133> accessed 3 November 2017; and James J Nedumpara, *Injury and Causation in Trade Remedy Law: A Study of WTO Law and Country Practices* (Springer 2016).

[22] Nedumpara (n 14); David Leys, 'Does a Theory of Causation Exist under the WTO Safeguards Agreement?' (2014) 9(1) GTCJ 10; and Pratik Tayal, 'A New World of Causation in Safeguards: Application of the 'But for' Test' (2015) 10(1) GTCJ 355.

[23] Gene Grossman, 'Imports as a Cause of Injury: The Case of the US Steel Industry' (1986) 20 J Int Econ 201; Kenneth Kelly, 'The Analysis of Causality in Escape Clause Cases' (1988) 37(2) J Ind Econ 187; Dukgeun Ahn and William J Moon, 'Alternative Approach to Causation Analysis in Trade Remedy Investigations: "Cost of Production" Test' (2010) 44(5) JWT 1023; Pindyck and Rotemberg (n 13); Douglas A Irwin, 'Causing Problems? The WTO Review of Causation and Injury Attribution in US Section 201 Cases' (2003) 2(3) WTR 297; and David Sharp and Kenneth Zantow, 'Attribution of Injury in the Shrimp Antidumping Case: A Simultaneous Equations Approach' (2005) 6(5) Econ Bull 1; and Thomas J Prusa and David C Sharp, 'Simultaneous Equations in Antidumping Investigations' (2001) 14(1) JFE 63.

about the nature of causation. There has been a limited amount of academic commentary about the best approach to use in analysing non-attribution and causation, which will be discussed in Chapter III.[24] Ultimately, Chapter III will put forward the Tripartite Non-Attribution/Causation Analysis as a more consistent and accurate methodology for making a finding of serious prejudice.

Of the four chapters that discuss WTO law, Chapter IV is the only chapter in this thesis that is not concerned with some kind of economic harm to a Member's industry. Instead, Chapter IV relates to the impact of a Member's measure on the achievement of a policy objective, with the view to seeking exemption from the disciplines of Articles XX GATT or XIV GATS. The chapter discusses the approach to analysing the impact of a Member's measure in the current jurisprudence and, to that end, points out some basic conceptual flaws with that approach. As in Chapter V, and in contrast to Chapters II and III, the non-attribution and causation requirements that may be used to determine the causal link between a measure and its policy objective are implied, rather than explicit. Nonetheless, it is suggested that assessing the impact of a measure on a policy objective makes little sense without both a non-attribution and causation analysis. As such, Chapter IV argues that the Tripartite Non-Attribution/Causation Analysis should also be applied in this context in order to provide the most precise assessment of the impact of a measure to achieving its policy objective.

Chapter V examines the process of calculating retaliatory measures under Articles 22.6 DSU and 4.10 SCM Agreement in response to a Member's failure to bring its measure into conformity with a DSB ruling. This chapter examines the current jurisprudence, and suggests that the current procedure demonstrates a misunderstanding of causation. In particular, Chapter V suggests that, before the amount of retaliation can be calculated, arbitrators must, as a first step, find a causal link between a Member's failure to bring its measure into conformity with a DSB ruling and the level of nullification or impairment inflicted on an industry. Moreover, this chapter also suggests that arbitrators have also neglected to give meaningful consideration to the need to separate the impact of a Member's failure to bring its measure into conformity with a DSB ruling from other potentially confounding factors. Accordingly, the non-attribution and causation analyses that this chapter discusses are not explicitly provided for in the agreements in question; but this chapter suggests that an accurate estimate of the effects of a Member's failure to comply with a DSB ruling does not make sense without them. Once again, this chapter argues that the Tripartite Non-Attribution/Causation Analysis is the best means for performing these analyses.

[24] Andrew Sapir and Joel P Trachtman, 'Subsidization, Price Suppression, and Expertise: Causation and Precision in Upland Cotton' (2008) 7(1) WTR 183; and see generally, Richard H Steinberg and Timothy E Josling, 'When the Peace Ends: The Vulnerability of EC and US Agricultural Subsidies to WTO Legal Challenge' (2003) 6(2) JIEL 369.

[3.0] Sources and Methodology

Despite the importance and difficulty of analysing non-attribution and causation in WTO law, it has not attracted the amount of academic commentary that it arguably deserves. There has not been any literature to date on what this thesis has called the Tripartite Non-Attribution/Causation Analysis. Indeed, there does not appear to be any significant commentary recognising the importance of the three-step process at all. Moreover, given that the non-attribution and causation analyses in Chapters IV and V are implicit, there has been absolutely no commentary on conducting non-attribution and causation analyses in those contexts. There has been some discussion of non-attribution and causation in respect of trade remedies, which will be considered in Chapter II. A small amount of consideration has also been given to causation in respect of serious prejudice, which will be canvassed in Chapter III. Overall, however, the subject has attracted remarkably little comment, and such paucity of comment is reflected in the fact that this thesis will draw on relatively few secondary sources. Instead, this thesis overwhelmingly uses the international treaties and the jurisprudence. In Chapter II, it also draws on some limited US and EU law and jurisprudence as a means of understanding the causal threshold required for a determination of injury in relation to the trade remedies.

This thesis is primarily concerned with adapting and applying the Tripartite Non-Attribution/Causation Analysis to the six parts of WTO law that were identified above. It has been seen that Chapter I sets out the causal theories and tests that will be critical to understanding the rest of the thesis. Chapters II – V begin with an examination of the state of the current jurisprudence before preceding to argue how the Tripartite Non-Attribution/Causation Analysis offers a superior approach to analysing non-attribution and causation in WTO law. That said, the precise form that the Tripartite Non-Attribution/Causation Analysis takes will differ in each chapter, depending on the nature of the causal questions that each chapter raises. In this sense, the Tripartite Non-Attribution/Causation Analysis acts as a kind of scaffolding, whilst the precise details of what must occur at each of the three steps and what kinds of causal tests must be applied varies between chapters.

[4.0] Limitations of this Thesis

There are two points at which this thesis draws on econometric tests. The first is in relation to the second step of the Tripartite Non-Attribution/Causation Analysis, which requires econometric tests to be undertaken at the Disentanglement Stage of the Non-Attribution analysis. The need to draw on econometric tests at this point of the Tripartite Non-Attribution/Causation Analysis recurs in four out of the five chapters. In particular, econometric tests are required to quantify the impact of one factor vis-à-vis other potentially confounding factors. This thesis cites some existing research about the econometric tests that have been developed for separating the impact of imports vis-à-vis other potentially confounding factors; but it is beyond the scope of this thesis to provide any analysis of the best econometric approach,

or to suggest alternative econometric approaches. Moreover, the Panels that might be tasked with applying the Tripartite Non-Attribution/Causation Analysis can draw on a group of experts under Article 13.2 of the DSU to assist with designing econometric tests that are most appropriate for the disentanglement exercise in question.

The second set of econometric tests that this thesis discusses is in relation to interpolating the future effect of a measure on a policy objective for the purposes of seeking exemption for a measure under Articles XX GATT or XIV GATS. That is, it will be argued in Chapter IV that, to the extent that a Panel must examine the future effects of a measure on a policy objective, there are econometric tests that can be drawn upon to assist with predicting future impact based on small amounts of present data. Chapter IV looks at the way in which the Statistical Significance Test and Linear Regression Analysis can assist with these predictions. It is possible that other factual scenarios may require different econometric tests. In this sense, the discussion of the use of the SST and LRA is a guide only; and again, future Panels may be required to seek expert advice from econometricians about the most appropriate quantitative tests for this particular scenario also under Article 13.2 of the DSU.

Chapter I:
Causal Theory

[1.0] Introduction

Chapter I will detail the main causal concepts and tests that will be applied in Chapters II – V of this thesis. To this end, it is helpful to begin with a concrete, factual scenario that raises causal questions, to which this chapter will constantly return in its exposition of the way in which the causal tests operate. This factual scenario is as follows:

> Adam is burning some excess wood and kindling in his back garden inside a large drum. Adam is supervising the burning, but is distracted for a minute by his wife, Beatrice. During this moment of distraction, a bird collects a smouldering stick in its beak and flies away. The bird drops the smouldering stick in the unkempt garden of one of Adam's neighbours and continues to fly away. The smouldering stick catches fire and the fire quickly spreads and burns down the house of Adam's neighbours before the fire brigade has time to come and extinguish the flames. Who or what caused the house of Adam's neighbours to burn down?

The way in which a fact-finder goes about assessing causation in the above scenario—or indeed, in any scenario—depends very much on the purpose that such a causal explanation is required to serve within the practical projects of the law.[25] It was seen in the introduction that the law generally draws on causation for three purposes—(1) so as to attribute responsibility to an agent; (2) to explain how earlier conditions may have led to a later state of affairs; and (3) to make predictions about the likely future contribution of a condition to a state of affairs.[26] In this sense, unlike a causal philosopher, who may regard causation as a 'context-free project',[27] lawyers are interested in causation to the extent that it advances their own practical objectives. Despite this difference in the motivations for studying causation, the law has borrowed extensively from philosophy in developing causal tests that are accepted by decision-makers and legal theorists alike.

Returning to the example of Adam and the fire above, if a lawyer is trying to sue Adam under negligence law, he or she would emphasise those facts associated with Adam's lack of care in his supervisory duties as the cause of the harm. Adam's defence lawyer might, instead, place more weight on the unkempt state of the garden of Adam's neighbours. In other words, the purpose of suing Adam in negligence law is *attributive,*

[25] Guido Calabresi, 'Concerning Cause and the Law of Torts' (1975–76) 43 U Chi L Rev 69, 107.
[26] Honoré, 'Causation in the Law' (n 2).
[27] Jane Stapleton, 'Causation in the Law' in Helen Beebee, Christopher Hitchcock and Peter Menzies (eds), *The Oxford Handbook of Causation* (OUP 2009) 750.

as the lawyers seek to attribute harm for the injury to a particular party. Whilst almost all negligence cases are attributive in purpose,[28] it will be seen in subsequent chapters that WTO law is concerned with all three of these projects—attributive, explanatory and predictive—and that it is therefore necessary to consider both retrospective and prospective causal tests. For this reason, this chapter will detail causal tests that examine both past and future causal contributions with the view to determining responsibility.

Having just said that causation can be explained in a manner that fits with the practical purposes of the law, it does not follow that this thesis means to suggest that causation is in some way ontologically barren or that it has no core essence.[29] The idea that causation is bereft of any essential nature has been argued for by some contemporary causal philosophers, such as Nancy Cartwright and Peter Godfrey-Smith. They see causation, not as a unified concept with a distinct essence, but rather, as one that takes on different forms in different systems.[30] This fundamental philosophical question about whether causation contains a true essence and the form that this might take is one on which this thesis remains agnostic. In sum, by arguing for the idea that causation is manipulated in a manner that suits the practical projects of the law, this thesis is making an epistemological claim about how causation is best *revealed* in different contexts. It is not, however, making an ontological claim about the *essence* of the concept of causation itself.

Section [2.0] of this chapter will discuss two popular non-quantitative causal tests. The first is the *sine qua non* test. The second involves tests that will be termed 'weak necessity/strong sufficiency tests', because of the different weights that they place on the qualities of necessity and sufficiency. Section [2.0] will also set out some of the limits to the use of the *sine qua non* test, since this causal test has frequently been used as a kind of default causal test in common law systems,[31] even by the AB in adjudicating WTO law.[32] It will also illustrate some of the ways in which the weak necessity/strong sufficiency tests are superior to the *sine qua non* test, whilst still acknowledging that the *sine qua non* test has some important merits. Section [3.0] will set out the main features of two econometric tests that will be applied in Chapter IV. The first econometric approach draws upon the Statistical Significance Test, a mathematical approach used to determine the probability that two variables are in a causal relationship. The second is Linear Regression Analysis, which will be used to model the causal relationship between a dependent and an independent variable.

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[28] See Peter Cane, *Responsibility in Law and Morality* (OUP 1950) 116.

[29] See, eg, John Mackie and Immanuel Kant, who defend the notion that causation has a core essence: John L Mackie, *The Cement of the Universe* (OUP 1974) especially 270–96; and see generally, Immanuel Kant, *Prolegomena to Any Future Metaphysics that Will Be Able to Come Forward as Science: With Selections from the Critique of Pure Reason* (Gary Hatfield tr & ed) (CUP 1997) especially §17; Immanuel Kant, *Critique of Pure Reason* (tr & ed Paul Guyer & Allen W Wood) (CUP 1998) Pt II, Div I, Bk I, Ch I.

[30] See Nancy Cartwright, 'One Word, Many Things' (2002) 71(5) Phil Sci 805, 818; Nancy Cartwright, *The Dappled World: A Study of the Boundaries of Science* (CUP 1999) and Peter Godfrey-Smith, 'Causal Pluralism' in Beebee et al (n 20). See also Daniel M Hausman, 'Essay Review: Physical Causation' (2002) 33 Stud Hist Philos 717, 717.

[31] Guido Calabresi (n 18) 85; John D Rue, 'Returning to the Roots of Bramble Bush: The 'But for' Test Regains Primacy in Causal Analysis in the American Law Institute's Proposed Restatement (Third) of Torts' (2003) 71(6) Fordham L Rev 2679, 2684.

[32] See, eg, the current causation test used for Serious Prejudice: Chapter III, Section [6.0], 111–114; and the causation test used to determine whether a responding Member's failure to comply with a DSB ruling caused the complaining Member's nullification and impairment: Chapter V, Section [2.1], 147–49.

It is important to emphasise that this chapter does not attempt to provide a comprehensive account of the philosophy of causation in the law generally, nor does it aim to cover all features of the non-quantitative or econometric approaches to causation specifically. Instead, the scope of this chapter is narrower. Its ambit is dictated by the ultimate relevance of the causal theories and principles to the arguments that will be made in subsequent chapters. As such, only those causal principles or tests that will be discussed or applied in subsequent chapters are represented here. This chapter now turns to consider those causal tests that will be most relevant to subsequent chapters.

[2.0] Some Non-Quantitative Approaches to Causation

[2.1] Introduction to Non-Quantitative Causal Connections

The non-quantitative approach to causation involves making a determination about causation based on the quality of the connection between a causal factor and an outcome. That is, the connection between a causal factor and an outcome may take on a particular form or nature—such as, the forms of necessity or sufficiency for the ensuing outcome. In order to illustrate these forms of necessary and sufficient connection, this section will adapt Mackie's famous example involving slot machines.[33]

Suppose that there are two chocolate machines that produce chocolate in response to the insertion of a one-pound coin. The first machine (Machine 1) is designed to produce chocolate if a person inserts a one-pound coin. Machine 1 usually produces chocolate in response to a person inserting a one-pound coin; but, due to a technical fault, occasionally Machine 1 fails to produce the chocolate despite the entry of a one-pound coin. It can thus be said that a necessary condition for Machine 1 to produce chocolate is the insertion of a one-pound coin because the first machine *never* delivers a chocolate *unless* a one-pound coin is inserted. This means that it is impossible to get chocolate without inserting a one-pound coin—though it is possible to insert a one-pound coin and not get chocolate. In this sense, entry of the coin is *necessary but not sufficient* for the production of chocolate in all cases. Taking this specific example and extrapolating more broadly, a necessary condition for an effect may be defined, then, as a condition that must be satisfied in order for that effect to be brought about.

The second machine (Machine 2) is also designed to produce chocolate if a person inserts a one-pound coin. Due to a different technical fault than the one that affects Machine 1, Machine 2 will always produce chocolate when a one-pound coin is inserted, but occasionally it will also produce chocolate when a one-pound coin has *not* been inserted. In this scenario, inserting a coin into the machine is *sufficient but not necessary*

[33] This thesis will not enter into the debate about whether two of Mackie's three candy machines are 'indeterministic', since this is beyond the scope of this thesis: see Mackie (n 22) 40–41 cf Tony Honoré, 'Necessary and Sufficient Conditions in Tort Law' in David G Owen (ed), *The Philosophical Foundations of Tort Law* (OUP 1997) 381 and Richard W Wright, 'The NESS Account of Natural Causation: A Response to Criticisms' in Richard Goldberg (ed), *Perspectives on Causation* (Hart 2011) 311.

for the production of chocolate in all cases. That is, the one-pound coin is *sufficient* because, if a person inserts a one-pound coin into Machine 2, they can be assured that this will definitely result in chocolate being produced, but it is not *necessary* because Machine 2 will occasionally produce chocolate without the insertion of a one-pound coin. In view of this example, it is possible to define a sufficient condition for an effect as a condition that, if satisfied, guarantees that effect. With this understanding of necessary and sufficient conditions, this section turns to discuss the two most important non-quantitative causal tests that have drawn on them.

[2.2] Counterfactuals and the *Sine Qua Non* Test

In order to understand how counterfactual theory works in practice, it is helpful to begin with a practical example. To take the factual scenario with which this chapter opened, a counterfactual way of explaining causation in this scenario would be to say that *but for* Adam's wife, Beatrice, distracting him from supervising the burning of the wood, Adam would have shooed away the bird that went on to take the smouldering kindling. In other words, a counterfactual approach to providing a causal explanation for an outcome involves isolating one factor that 'made a difference' to that outcome.[34] In this case, the fact that Beatrice distracted Adam made a difference to the outcome that followed, because it was the point from which all of the events leading up to the burning down of the house of Adam's neighbours followed. To put this in more technical language, it could be said that the event of the house burning down counterfactually depended on Beatrice distracting Adam from supervising the burning wood and kindling. This counterfactual explanation might be represented diagrammatically as follows:

[34] Michael S Moore, *Causation and Responsibility: An Essay in Law, Morals, and Metaphysics* (OUP 2009) 84.

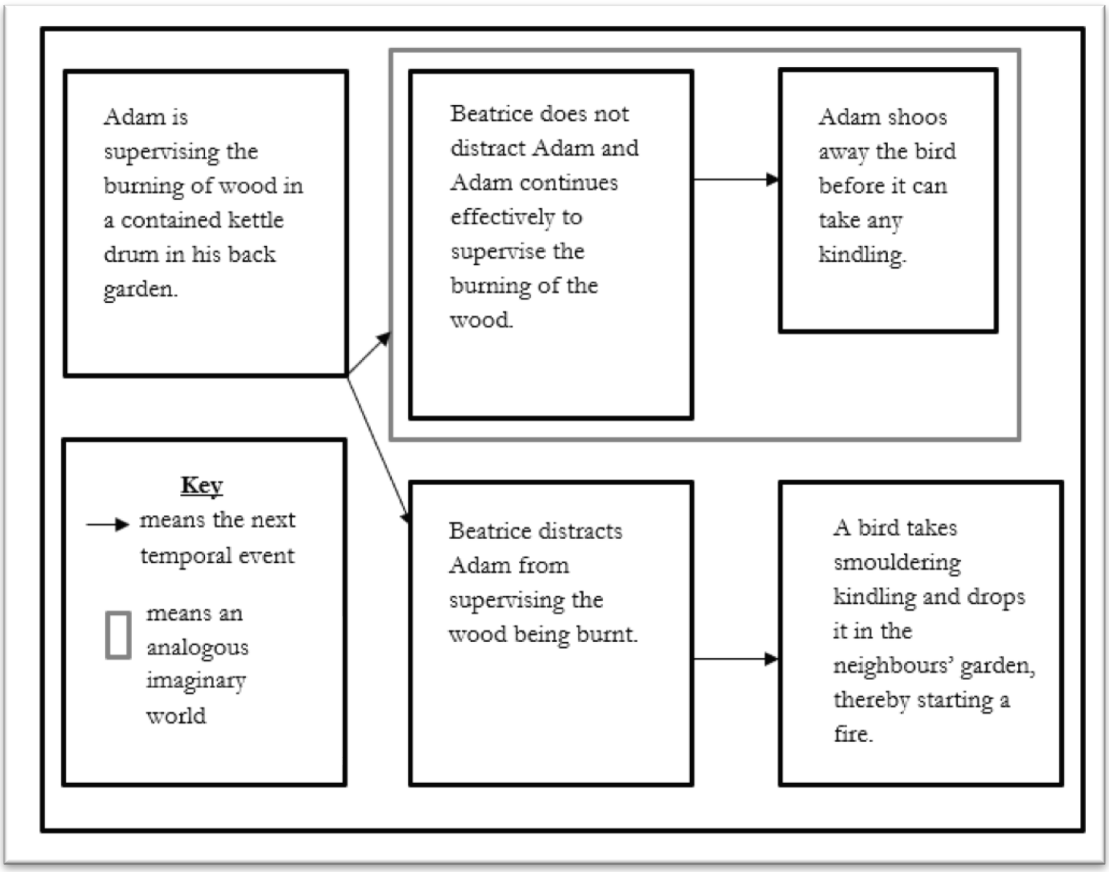

Figure 1: The application of the *sine qua non* test to the factual scenario of Beatrice distracting Adam from supervising the burning wood

In sum, the *sine qua non* test involves asking, 'But for X, would Y have occurred?' which is a means of interrogating whether Y counterfactually depended on X. If it is likely that Y would have occurred regardless of X, it is unlikely that X is the cause or one of the causes of Y. If, on the other hand, Y would not have occurred in the absence of X, it may be concluded that X is the cause or one of the causes of Y.[35] Accordingly, X is what made a difference to Y, and in this sense, X must be *necessary* for Y. It follows that the counterfactual account of causation privileges Hume's idea of 'necessary connexion' as the most important relation between cause and effect.[36]

[35] One of David Hume's definitions of causation is as follows: *an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second.* Or in other words *where, if the first object had not been, the second never had existed:* Hume, *An Enquiry Concerning Human Understanding* (n 1) Sect VII, Part II, 76 (emphasis original). There is some controversy surrounding whether Hume's definition here refers to two different approaches to causation, or only one: See generally, eg, JA Robinson, 'Hume's Two Definitions of "Cause"' (1962) 12(47) Phil Q 162. Certainly, David Lewis was of the view that 'Hume defined causation twice over': David Lewis, 'Causation' (1973) 70 J Phil 556. Lewis claimed that Hume's second definition, 'if the first object had not been, the second never had existed' formed the foundation of the counterfactual theory, whereas his first definition was foundational to the 'regularity' theory: David Lewis, 'Causation' (1973) 70 J Phil 556.

[36] David Hume, *A Treatise of Human Nature* (1789) LA Selby-Bigge (ed) revised by PH Nidditch (2nd ed, OUP 1975) Book I, Part III, Sect. II, 77.

If conducting an experiment, a fact-finder would be in a position precisely to identify which factor made the difference to the outcome by repeating experiments with controlled variations. That is, the fact-finder might include a factor in one experiment and then exclude it in another so as clearly to identify which factor made the difference. This kind of experimental method is not possible when attempting to isolate which factor was necessary to bringing about an injury in the law.[37] As such, in order to try to discover which factor was material to producing injury in the law, a fact-finder would construct an analogous imaginary world using the *sine qua non* test, in which all conditions remain the same except for the condition whose material difference is being tested.[38] This idea can be seen in Figure 1 above. David Lewis, in his development of a counterfactual approach to causation, takes the idea of analogising the actual world with other possible worlds much further.[39] His theory not only requires analogising one possible imaginary world, as is a requirement of the *sine qua non* test, but rather, analogising many possible imaginary worlds. Nonetheless, Lewis' possible worlds approach is beyond the scope of this thesis because it is unsuited to the projects of the law. Specifically, Lewis' possible worlds theory is interested in the metaphysics of causation for its own sake, and, as such, to test his hypothesis would involve an extremely complex series of analogous possible worlds that would be difficult or even impossible to apply in the context of the courtroom. That is, testing Lewis' theory would involve setting up a control in the real world, the results from which would then need to be compared with the results of the hypothetical world. As setting up these controls is difficult or even impossible, from a practical viewpoint, it is unlikely that Lewis' hypothetical world theory could be verified in the requisite way.

Unlike Lewis' *possible worlds* theory, the *sine qua non* test, which is also grounded in counterfactualism, has been widely applied by common law courts, partly because it is the most intuitive of causal tests to 'the ordinary man'.[40] A further benefit of the test is that it is heuristically simple when compared to the weak necessity/strong sufficiency tests to be discussed below because it does not require establishing a 'set' of conditions in order to analyse causation. Nonetheless, the *sine qua non* test as a means of interrogating causation has important limitations that make it unsuitable in some circumstances. It is to these limitations and various theorists' attempts to overcome them that this chapter now turns.

[37] Gregory Messenger, 'The Development of International Law and the Role of Causal Language' (2016) 36(1) Oxford J Legal Stud 110, 114.
[38] Mackie (n 22) 56.
[39] See generally, David Lewis, *Counterfactuals* (Blackwell 1973) and David Lewis, *On the Plurality of Worlds* (Blackwell 1986).
[40] *Yorkshire Dale Steamship Co v Minister of War Transport* [1942] AC 691 (HL) 703 per Lord Macmillan.

Criticisms of the Sine Qua Non Test

'Over-inclusiveness' of the *Sine Qua Non* Test

Despite the important benefits of the *sine qua non* test, it also has some important limitations. Some critics of the *sine qua non* test object to what they perceive as its 'over-inclusiveness'.[41] This is because the test can be misapplied to support the attribution of causal responsibility to fairly trivial causal factors in scenarios involving cumulative causal contributions. For example, it is contrary to common sense to find that simply because Beatrice distracted Adam from supervising the burning of wood, Beatrice caused the neighbours' house to burn down. This, however, is an important consequence of the fact that the *sine qua non* test only uses the quality of 'necessity' to interrogate cause.

To some extent, this 'over-inclusiveness' problem may partially be resolved by repeating the *sine qua non* test any number of times in order to reveal multiple simultaneous causal factors. For example, the *sine qua non* test could be repeated to reveal the following other factors: *but for* the fact that a bird picked up some smouldering kindling; or *but for* the fact that the wood was not being burnt in a sealed environment where birds could not get at it; or *but for* the fact that Adam did not ask someone else to supervise the burning of the wood for the period when he stopped supervising etc. However, the difficulty with the *sine qua non* test is that, once all of these necessary factors have been revealed, the *sine qua non* test has no ability to identify which (if any) of the resulting multiple necessary conditions is ultimately *sufficient* for bringing about the injury. This is because the test has no sufficiency criterion to assist in gauging which of the necessary factors should be attributed with causal responsibility. Accordingly, the *sine qua non* test must be used with extreme caution to find the responsible cause in cases involving cumulative causal factors.

'Under-inclusiveness' of the *Sine Qua Non* Test

Having just said that the *sine qua non* test is worrisome for its 'over-inclusiveness', more worrisome still is the potential for the test to be under-inclusive.[42] Like all counterfactual tests,[43] the *sine qua non* test is unable reliably to deal with cases of 'duplicative' or 'pre-emptive' over-determination. To take each of these terms in turn, duplicative over-determination cases are those that involve multiple causes that duplicate the injury.[44] For example, to tweak the facts of the case of Adam and the incineration of his neighbours' house, imagine that, just as the bird dropped the smouldering kindling in the neighbours' garden, the neighbours left a candle unattended in a bedroom, which would have caused the house to burn down anyway. Under these revised facts, the neighbours' house would have burnt down because of *both* the fire started by the smouldering kindling in the back garden *as well as* the fire started by the unattended candle in the bedroom.

The *sine qua non* produces false conclusions when analysing this type of factual scenario involving duplicative over-determination. This is because, if one factor had not brought about the injury, the other factor would

[41] Moore (n 27) 85.
[42] ibid 86.
[43] LA Paul, 'Counterfactual Theories' in Beebee et al (n 20) 172–82.
[44] Richard W Wright, 'Causation in Tort Law' (1985) 73(6) California L Rev 1735, 1791–92.

have brought it about instead. That is, *neither* the fire in the bedroom *nor* the fire in the back garden is *necessary* to have burnt down the neighbours' house, since if one of these factors was not there, the second factor would have caused the house to burn down regardless. As neither factor is *necessary* to burn down the house in this sense, the *sine qua non* test finds that *neither* factor caused the house to burn down. This result is manifestly unacceptable from the perspective of a lawyer seeking to attribute an agent with responsibility for the fire.

Similarly, the reliability of the *sine qua non* test further falters in the face of pre-emptive over-determination cases. Pre-emptive over-determination cases are those that involve two sets of factors that would, theoretically, each be minimally sufficient to bring about the harm, but the first actual sufficient set of factors occurs prior to the alternative hypothetically sufficient set. For example, to alter the facts again, this would involve the bird dropping the smouldering stick in the neighbours' back garden (at, say, 3.02pm) and then the unattended candle starting a fire in the bedroom (at, say, 3.08pm), where the effect is that the neighbours' house is incinerated. In this sense, the fire started by the smouldering stick in the back garden pre-empts the fire started by the unattended candle. Once again, the *sine qua non* test produces a false conclusion when analysing this kind of factual scenario. According to the *sine qua non* analysis, neither factor was necessary to cause the house to burn down because, if the first factor had not occurred, then the second factor would have brought about the same injury six minutes later. In this sense, neither factor is *necessary* for the house to have burnt down, and therefore, neither factor is causally responsible for the destruction of the house. As with the analysis of duplicative over-determination, this conclusion is nonsensical, and highlights that the *sine qua non* test is similarly limited in dealing with cases involving pre-emptive over-determination.

From a legal perspective, where attributing responsibility for causing injury is paramount, the inability of the *sine qua non* test to reach correct conclusions in cases of duplicative and pre-emptive over-determination is indeed problematic. Several causation scholars have sought to find conceptual solutions to this limitation.[45] These solutions have been more successful in the case of pre-emptive over-determination than duplicative over-determination. When confronted with duplicative over-determination cases, Mackie claims that it could only confidently be said that the cause for duplicative over-determined cases is the 'cluster of events,'[46] the vagueness of which has been criticised.[47] Moreover, where Mackie attempts to interrogate further as to which factor in the cluster 'really caused' the injury, he concedes that, if no further information can be furnished to discriminate between the two identical factors that occasioned harm, 'this question has

[45] Such proposed solutions have included, for example, detailing the precise manner of the occurrence (Rollin M Perkins, *Criminal Law* (2nd ed, 1969) 689; Mackie (n 22) 44–47; detailing the precise manner of the injury (Arno C Becht and Frank W Miller, *The Test of Factual Causation in Negligence and Strict Liability Cases* (Washington Univ Stud 1961); excluding hypothetical facts (Glanville Williams, 'Causation in the Law' (1961) Camb LJ 62, 63–65, 69); aggregating potential multiple causes (William Lloyd Prosser, W Page Keeton, Dan B Dobbs, R Keeton and D Owen, *Prosser and Keeton on the Law of Torts* (5th ed, West Publishing 1984) 17); the substantial factor test (Jeremiah Smith, 'Legal Cause in Actions in Tort' (1911–12) 25 Harvard L Rev 103, 103–28, 223–52, 303–27, 309–21).
[46] Mackie (n 22) 47.
[47] See, eg, HLA Hart and Tony Honoré, *Causation in the Law* (2nd ed, OUP 1985) xli.

no answer' from the perspective of the *sine qua non* test.[48] It is conceded that cases of duplicative over-determination are fairly rare outside causal philosophy textbooks. Nonetheless, the unacceptable conclusion that the *sine qua non* test produces in respect of duplicative over-determination, in particular, means that it cannot be relied upon to analyse all causal scenarios.

The Hypothetical World Problem

In addition to its over- and its under-inclusiveness, there is a third difficulty which besets the use of the *sine qua non* test. This stems from the fact that the *sine qua non* test relies fundamentally on comparing and contrasting a set of facts or events in the real world with an imagined hypothetical world.[49] This inherently comparative approach means that it is very difficult effectively to compare the facts and events of the real world with a hypothetical world whose features are only imagined and therefore indeterminate.[50] In particular, it is impossible directly to observe or gather evidence in relation to the hypothetical world.[51] Accordingly, in order to make the comparison between the real and imagined world sufficiently determinate, it is necessary to make a set of assumptions about how the imagined world would operate.[52] This thesis has called the methodological problems associated with this difficult comparison the *hypothetical world problem;* and it is to this problem that this thesis will continually revert.

The difficulties associated with the hypothetical world problem can be demonstrated with a practical example. To this end, it is helpful to return to the example of Adam and Beatrice, which involves comparing the real world in which Adam is distracted with an imagined, hypothetical world in which the fact-finder must assume that Adam is not distracted by something or someone else in this hypothetical world. It may be possible that Beatrice does not distract Adam in the analogous, imaginary world, but it is also possible that Adam is distracted instead by a spider crawling up his leg or some chest pain or the cricket score on his portable radio. In other words, the assumptions that a fact-finder is required to make in order to compare the real world with an imagined, hypothetical world may not necessarily be sound.

Some theorists have argued that this apparent conceptual difficulty associated with the *sine qua non* test is not insurmountable, since the comparison with the imagined hypothetical world may be performed with the view simply to revealing which factor 'made a difference' to the outcome.[53] On this analysis, then, the only comparison that needs to take place is a comparison between the factor that was necessary to cause the outcome with the absence of this factor. For example, Adam's distracted state would be compared with a possible world where he was not distracted. At first sight, this proposal appears to be a panacea; but, in practice, it is impossible to know whether changing one feature of the hypothetical world would also significantly impact other features of that same world to the point that the comparison is unworkable. This

[48] Mackie (n 22) 47.
[49] Jonathan Schaffer, 'Contrastive Causation in the Law' (2010) 16 Legal Theory 259, 261.
[50] Moore (n 27) 85.
[51] Richard Scheines, 'Causation, Truth and the Law' (2008) 73(2) Brooklyn L Rev 625, 638.
[52] Moore (n 27) 85.
[53] Schaffer (n 42) 285.

is particularly the case with complex systems, such as economic systems, with which WTO law is concerned. For instance, to take an example that will be explored in Chapter II of this thesis, if a fact-finder were to interrogate whether an injury would have occurred but for a Member's increased imports, it is impossible to know what other features of that Member's economy would also change in the absence of these increased imports, and what potential impact these changed economic features might have on the question. In the absence of increased imports, for example, it is possible that there would have been excessive demand and insufficient supply of a particular good, thereby pushing up the price of the good and distorting the market. In this way, changing one economic feature of the hypothetical world generally brings about a cluster of other changes that make the comparison very difficult. Accordingly, in addition to the two other reasons set out above, the *sine qua non* test must be used with caution in relation to comparing complex systems. Given these significant conceptual difficulties with the *sine qua non* test, it is necessary to turn to an alternative non-quantitative test which was specifically designed to avoid these difficulties.

[2.3] The Weak Necessity/Strong Sufficiency Tests

In contrast to the *sine qua non* analysis, the weak necessity/strong sufficiency test conceives of causation in terms of clusters of factors that, when aggregated, bring about an outcome. For example, the weak necessity/strong sufficiency test would analyse the factual scenario involving the incineration of the house of Adam's neighbours by finding that the fact that Beatrice distracted Adam from supervising the wood being burnt was only *one* necessary factor in a *set* of factors which, when all taken together, were collectively sufficient to cause the house to burn down. This contrast between the *sine qua non* test analysis and the weak necessity/strong sufficiency test analysis may be seen from the contrast between Figures 2 and 3 below:

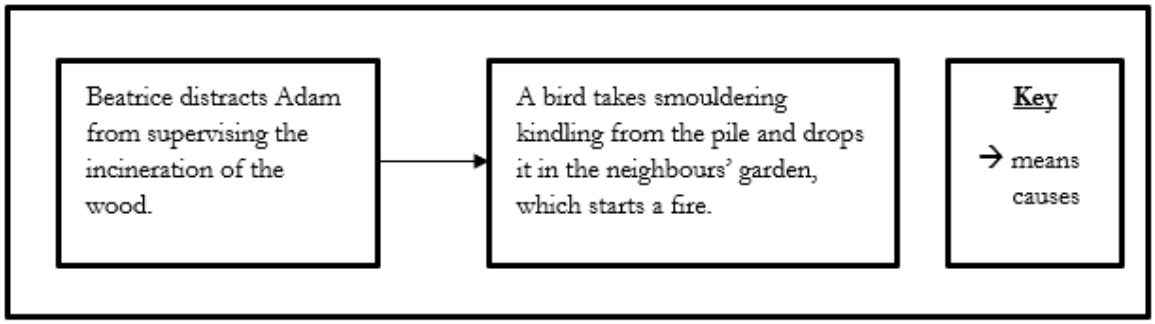

Figure 2: Representation of the one factor cause in the sine qua non analysis

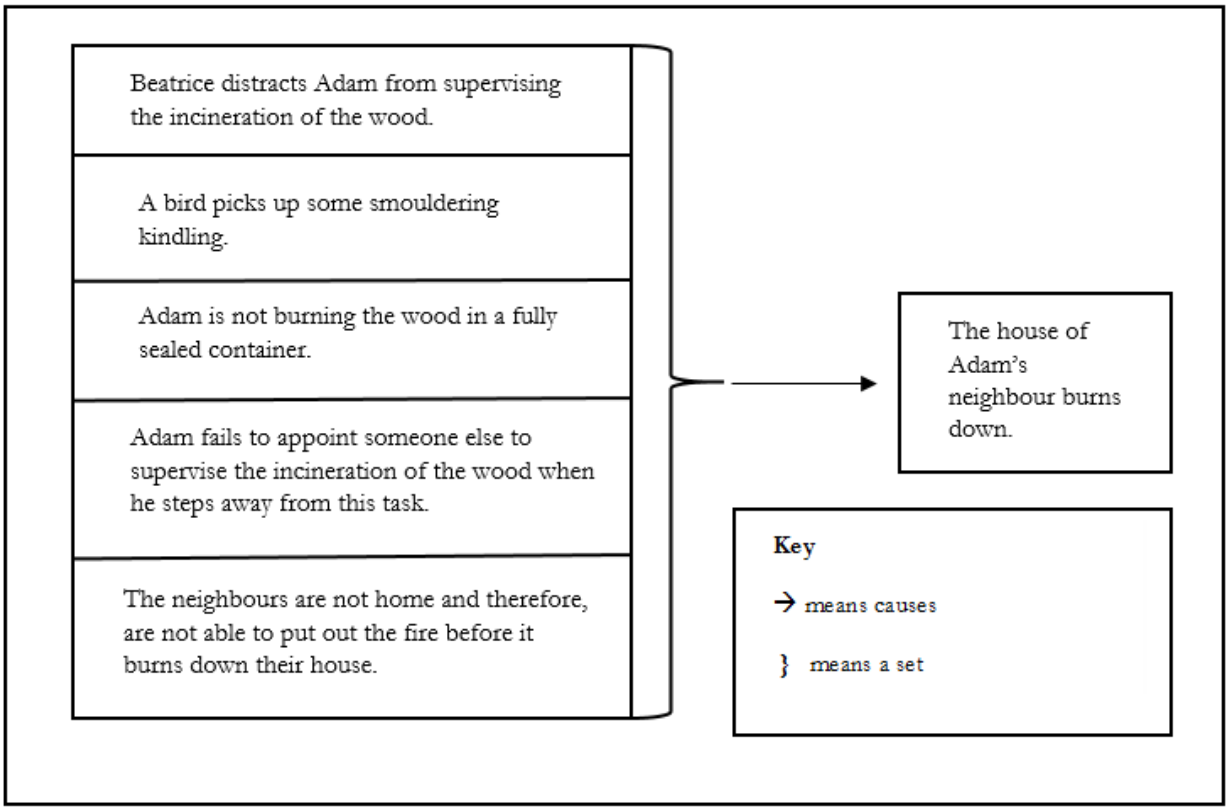

Figure 3: Representation of the importance of the set in the weak necessity/strong sufficiency test

There are three important contrasts between the *sine qua non* test and the weak necessity/strong sufficiency test that can be identified from comparing Figures 2 and 3 above. First, unlike the *sine qua non* test, the weak necessity/strong sufficiency test conceives of a cause in terms of a *set* of factors, rather than as a single factor.[54] Second, and following on from this point, the criterion of necessity is weaker in the weak necessity/strong sufficiency test than it is in the *sine qua non* test. That is, the *sine qua non* test requires a condition to be *strongly* necessary for the occurrence of the injury, in the sense that *the injury would not have been brought about without the existence of that condition*. In contrast, the weak necessity/strong sufficiency tests rely upon a *weaker* idea of necessity. That is, a condition must only be necessary to the sufficiency of a *set*, rather than to the injury itself. To put this another way, if a set of conditions is a cause of the injury when the weak necessity/strong sufficiency test has been used, then that set is made up of the *minimum* number of conditions that makes the set sufficient to have produced the injury. In this sense, the quality of necessity is subordinated to the quality of sufficiency. It is important to bear this distinction between strong and weak necessity in mind throughout this section.

[54] The weak necessity/strong sufficiency test owes a debt to the causal account of JS Mill, particularly Mill's insight that '[t]he cause (…) philosophically speaking, is the sum total of the conditions, positive and negative taken together': JS Mill, *A System of Logic Ratiocinative and Inductive* (JM Robson ed) (Routledge 1973) Book III, Chapter V, § 3.

The third important difference between the *sine qua non* test and the weak necessity/strong sufficiency test is that the latter relies on the idea that each member of a sufficient set has a relationship with the injury that is ascertainable by general laws.[55] That is, the weak necessity/strong sufficiency test relies on the idea that any causal statement, 'X causes Y' not only implies that X is causally connected with Y but also that all causal facts or events relevantly resembling X are also causally connected with causal facts or events that relevantly resemble Y.[56] For example, striking this particular match ignites this particular flame, but it also reveals the more general causal relationship between striking matches and igniting flames. In contrast, the *sine qua non* test relies on the counterfactual approach to causation, and therefore, it does not rely on general laws in forming causal relationships. Instead, the *sine qua non* test is focused simply on the specific factual scenario in question and the way in which each necessary factor counterfactually depends on the event that preceded it.

A key feature of the weak necessity/strong sufficiency test that follows from these points of difference is that the weak necessity/strong sufficiency test can resolve the problem of duplicative and pre-emptive over-determination that was shown to be the Achilles' heel of the *sine qua non* test. To take the case of duplicative over-determination first, it is worth reiterating that duplicative over-determination cases involve multiple causal sets that duplicate the injury. The weak necessity/strong sufficiency test is able to interrogate whether each set of circumstances is made up of necessary elements that are collectively sufficient to have caused the harm in question. Under this approach, unlike the *sine qua non* one, therefore, it is immaterial that neither set is *necessary* for the harm, since the key question is whether the set is made up of necessary elements that are collectively *sufficient* for the harm. As it is possible to have multiple sets of circumstances that are sufficient for the harm,[57] it is also possible under the weak necessity/strong sufficiency test to have multiple causes.[58]

To illustrate the analysis of duplicative over-determination under the weak necessity/strong sufficiency test, it is helpful to revert to the case of the neighbours' burning house. To return to the revised facts of the duplicative over-determination case set out above, imagine that the neighbours' unattended candle started

[55] Hart and Honoré (n 40) 111. It was seen in the context of understanding counterfactuals that one of Hume's definitions of causation is as follows: *an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second*: David Hume, *An Enquiry Concerning Human Understanding* (n 1) Sect. VII, Part II, page 76. Whilst Hume's restatement of this sentence went on to inspire Lewis' approach to counterfactuals, this sentence by itself has been widely interpreted as a summation of Hume's 'regularity' account of causation. Hume's 'regularity' account of causation is, in essence, that 'every singular causal statement [is] an instance of one or more general propositions asserting invariable sequence, and that causal connection consisted solely in this': Hart and Honoré (n 40) 11.

[56] Tom L Beauchamp and Alexander Rosenberg, *Hume and the Problem of Causation* (OUP 1981) 24.

[57] As well as drawing on Mill's insights about the complexity of causation, the weak necessity/strong sufficiency test also draws on Mill's ideas about the potential for there to be a plurality of causes. That is, Hume maintained that 'the same effect never arises but from the same cause': David Hume, *An Enquiry Concerning Human Understanding* (n 1) Book I, Sect. XV, Part III, page 173. Mill's account departs from Hume in this sense, not only by suggesting that an effect may have been produced by multiple factors, but also that an outcome may potentially be produced my multiple *sets* of factors: Mill (n 47) Book III, Chapter X, § 1. See also Hart and Honoré, (n 40) 19–20.

[58] The weak necessity/strong sufficiency account departs from Hume's idea here and adopts JS Mill's notion instead that an effect may have been brought about by multiple causes: Mill (n 47) Book III, Chapter X, § 1.

a fire in one of the bedrooms of their house at exactly the same time that the bird dropped the smouldering kindling in their back garden. Under this new set of facts, there are two sets of factors that are sufficient to bring about the injury to the neighbours' house—that is, (1) there is a set of factors associated with the unattended candle in the bedroom starting a fire; and (2) there is a set of factors involving the smouldering kindling in the back garden. According to the weak necessity/strong sufficiency test, *each* set of factors is sufficient in and of itself for the neighbours' house to burn down. Accordingly, under this analysis, *both* sets of factors would be held causally responsible for the injury—in contrast to the *sine qua non* analysis, where it has been seen that *neither* would be found to be a cause. This result under the weak necessity/strong sufficiency test is far more in keeping with common sense as well as moral intuitions of responsibility than the *sine qua non* analysis of duplicative over-determination. The weak necessity/strong sufficiency analysis of duplicative over-determination may be seen diagrammatically below:

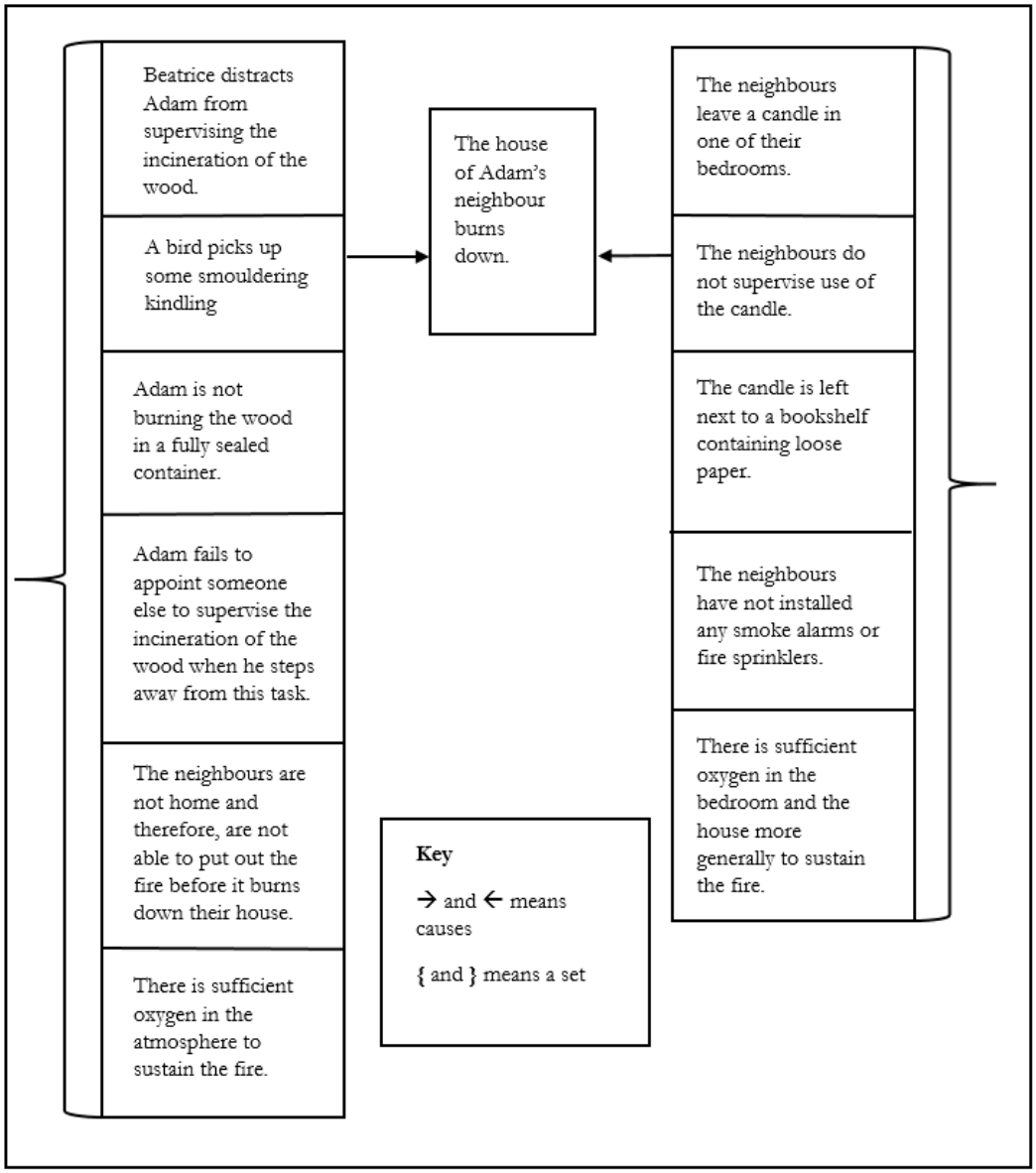

Figure 4: The weak necessity/strong sufficiency analysis of duplicative over-determination

In a similar vein, the weak necessity/strong sufficiency test can also resolve the difficulties that the *sine qua non* test has with pre-emptive over-determination. To demonstrate, it is necessary to change the details of the factual scenario concerning Adam and the smouldering kindling. Contrary to the facts in the previous paragraph, imagine that the bird drops the smouldering kindling in the garden of Adam's neighbours six minutes *before* the unsupervised candle in the neighbours' bedroom starts a fire. Under these new facts, there are still the same two sets of factors that are each sufficient to bring about the injury to the neighbours' house, as under the duplicative over-determination example—namely, (1) there is a set of factors associated with the unattended candle in the bedroom starting a fire; and (2) there is a set of factors involving the smouldering kindling in the back garden. However, whereas under the duplicative over-determination example, each set of factors is equally causally responsible, in this case involving pre-emptive over-determination, the first set of factors is sufficient *on its own* to be causally responsible for the injury to the neighbours' house. This is because the first set of factors brought about the injury before the second set of factors even materialised. Therefore, whilst the second set of factors involving the unsupervised candle would have been sufficient to have caused the injury to the neighbours' house, its effects were already pre-empted by the first set. Accordingly, only the first set of factors is causally responsible. The weak necessity/strong sufficiency analysis of pre-emptive over-determination may be seen diagrammatically below:

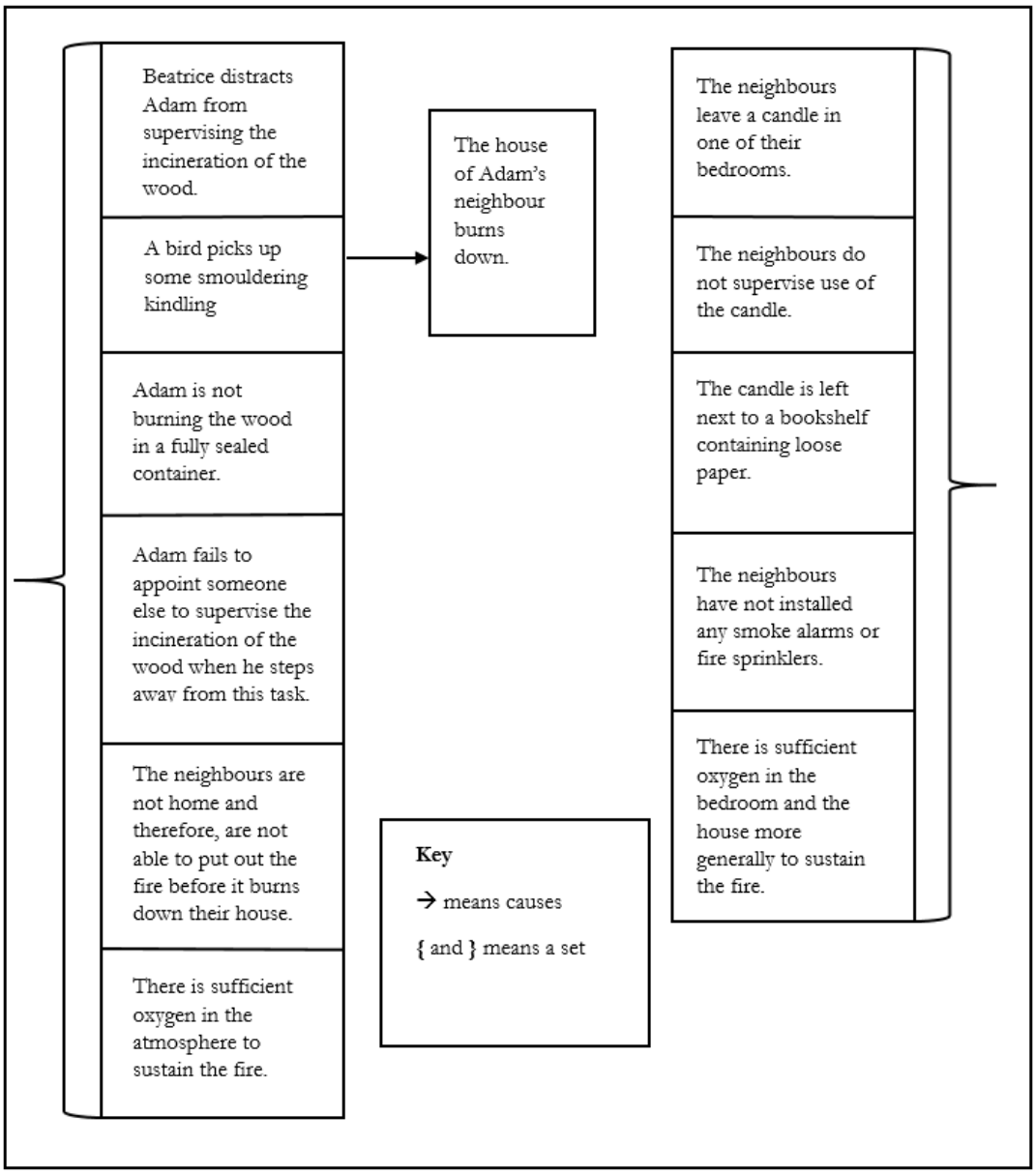

Figure 5: The weak necessity/strong sufficiency analysis of pre-emptive over-determination

There have been a number of different forms of the weak necessity/strong sufficiency test. The first, known as the 'causally relevant factor' account, was developed by Hart and Honoré.[59] Hart and Honoré's test was primarily aimed at resolving the difficulty of over-determination,[60] which it did successfully. Nonetheless, other theorists saw potential to expand the basic premise of the test. In particular, Richard Wright,[61]

[59] Hart and Honoré (n 40) 113.
[60] ibid 113–14.
[61] The NESS test, in the final form espoused by Richard Wright was, in fact, put forward by JD Fraser and DR Howarth in their article, 'More Concern for Cause' (1984) 4 Legal Stud 131 (see, in particular, pages 133–45). Wright argued that Fraser and Howarth reject the NESS test in favour of probabilistic cause: Wright (n 37) n 227. In fact, a close reading of Fraser and Howarth's article reveals that they did not reject the NESS test, but rather, applied it in a manner that Wright came to propound in his later work. It is regrettable, therefore, that, throughout the legal causal philosophy literature, Wright, rather than Howarth and Fraser, was given the credit for 'discovering' NESS. This thesis

otherwise a strong proponent of Hart and Honoré's 'causally relevant factor' test,[62] criticised the inability of the 'causally relevant factor' account to deal with cases of duplicative over-determination involving multiple contributory factors.[63] These are cases involving multiple causal sets that duplicate the injury where one or more of the sets is insufficient on its own to cause the injury, but become sufficient when combined with one or more other sets of factors. It is convenient to call these types of cases *contributory duplicative over-determination cases*. To illustrate, imagine that the unattended candle in the bedroom of the neighbours' house catches fire, but that, in this scenario, the fire only engulfs the bedroom before it is fused with a second fire that was started by the bird dropping the smouldering kindling in the back garden. In short, there is a small fire that only burns a fraction of the house and it is joined by a large fire that is capable of burning down the whole house on its own. According to Hart and Honoré's 'causally relevant factor' test, each fire would only be considered as causally responsible for burning down the neighbours' house if it was independently sufficient to have done so.[64] Concomitantly, under Hart and Honoré's analysis, only the large fire would be deemed causally responsible for the destruction of the neighbours' house, whereas the small fire would not be considered causative. Hart and Honoré's 'causally relevant factor' analysis may be seen diagrammatically as follows:

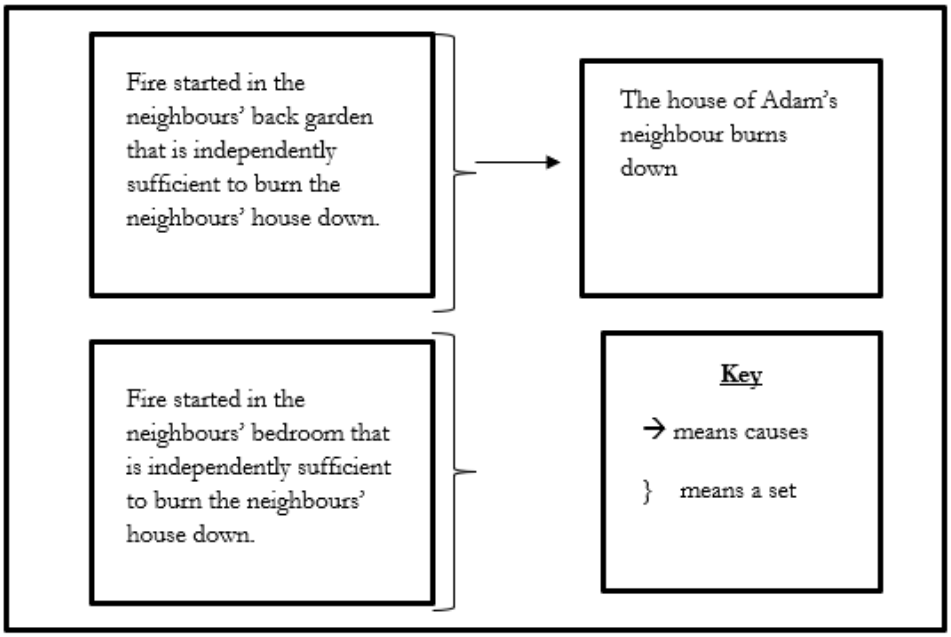

Figure 6: Hart and Honoré's 'causally relevant factor' analysis of contributory duplicative over-determination cases

will nonetheless continue to call the NESS test 'Wright's NESS test' because this is the recognised attribution in the literature.

[62] Wright (n 37) 1788.

[63] ibid 1791–92.

[64] Hart and Honoré (n 40) 123–24, 125, 206–07, 235–39, 245, 249.

Wright disagrees with Hart and Honoré's analysis of what has here been called contributory duplicative over-determination cases. According to Wright, the 'causally relevant factor' account is too restrictive, in that it requires each set to be sufficient independently of the other causal set.[65] Instead, Wright puts forward a revised version of the weak necessity/strong sufficiency test called the NESS test. Unlike the 'causally relevant factor' test, the NESS test is able to deal with situations involving one or more insufficient sets of factors that merge with a sufficient set, in order, potentially, to create more than one cause. To illustrate this revised version, if the fire that was started in the back garden is independently sufficient to cause damage to Adam's neighbours' house, then, self-evidently, it is a cause of the destruction. Wright's contribution is that if the fire that started in the bedroom was insufficient independently to burn down the neighbours' entire house, but nonetheless *becomes* sufficient when fused with the fire started in the back garden, the fire that started in the bedroom should be considered an additional cause at the moment of that fusion.[66] To frame Wright's point in more general terms, causes can be made up of sets that are independently sufficient to cause injury as well as sets that are independently insufficient but *become* sufficient when joined with those other contributory factors that make the set ultimately sufficient. The logic embedded in Wright's NESS test, he points out, has been used in case law, as where a plaintiff brought a nuisance claim against a set of motorcycles in the case of *Corey v Havener*.[67] In that case, it was not possible to found a nuisance claim based on the noise generated by one motorcycle independently of the others, though it was possible to reach the necessary nuisance threshold where the noise of all of the motorcycles was aggregated. Wright's treatment of contributory duplicative over-determination cases will also be drawn upon in the discussion of the Apportionment Analysis in Chapter II. Wright's contribution to this causal question can be seen diagrammatically below:

[65] Wright (n 37) 1791–92.
[66] ibid 1793.
[67] (1902) 182 Mass 250, 65 NE 69. See also Wright (n 37) 1792.

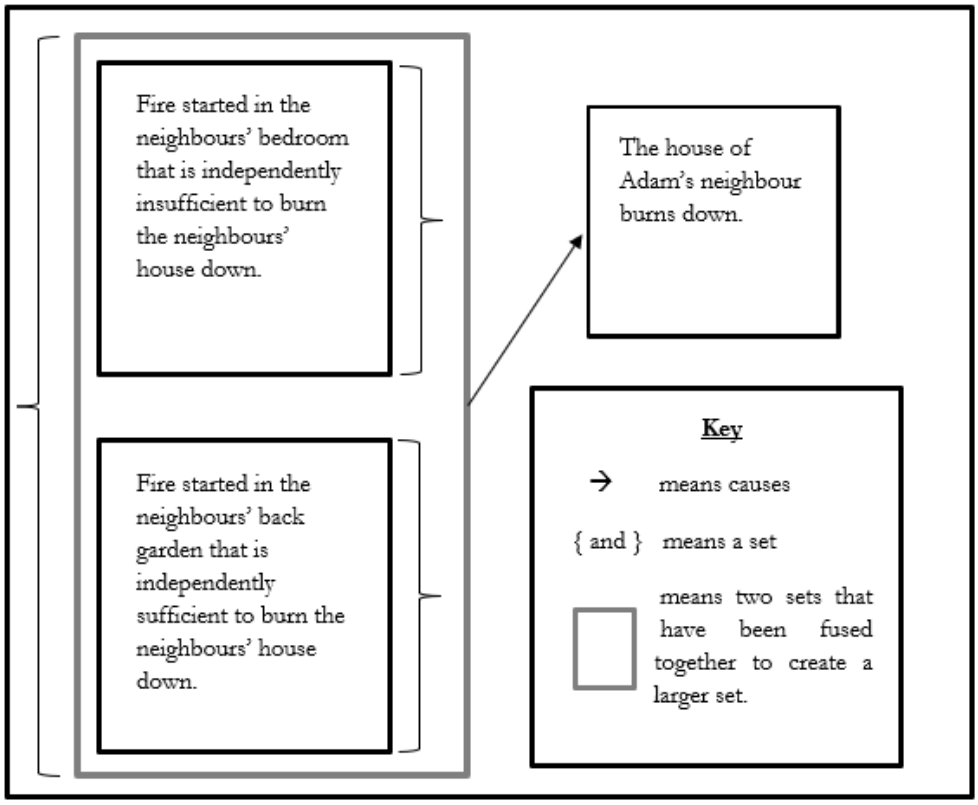

Figure 7: Wright's NESS analysis of contributory duplicative over-determination cases

John Mackie, too, put forward a version of the weak necessity/strong sufficiency test that preceded Wright's NESS test, which can also be used reliably to analyse cases of duplicative over-determination, pre-emptive over-determination and contributory duplicative over-determination. Mackie said that a conjunction of conditions may be seen as 'an *insufficient* but *non-redundant* part of an *unnecessary* but *sufficient* condition' or 'INUS' condition.[68] To demonstrate this formulation, Mackie also uses the example of a fire that breaks out in part of a house that is extinguished before the house is completely destroyed.[69] When analysed, experts attribute the cause of the fire to an electrical short-circuit. Mackie explains, however, that it would be incorrect to say that the short-circuit was actually a necessary and sufficient condition of the fire. Instead, he explains that, prior to the fire there were actually a set of conditions, some of which were positive (such as the presence of flammable material) and some negative (such as the absence of a fire sprinkler to extinguish the flame), all of which combined with the short-circuit to create a complex condition that was sufficient for the house to catch alight.[70] In this way, then, Mackie describes the short-circuit as an 'insufficient but necessary part of a condition which is itself unnecessary but sufficient' for the fire.[71] To break this down, first, the short-circuit is *insufficient* or 'I' because other positive and negative factors are required to start the fire. It is non-redundant or 'N' in the sense that it is necessary to a set of conditions

[68] Mackie (n 22) 62 (emphasis original).
[69] JL Mackie, 'Causes and Conditions' (1965) 2 Am Phil Q 245, 245–64, 245.
[70] ibid.
[71] ibid.

that is sufficient to start the fire. Second, the set is *unnecessary* or 'U' for the ignition of the fire because the existence of the short-circuit does not guarantee the fire. (That is, the fire could have been ignited by something other than the short-circuit—for example, an unattended candle in a bedroom.) Finally, the cluster is *sufficient* or 'S' in the sense that, if the set of factors were to occur, a fire would result.

As with Wright's NESS test, Mackie's INUS test can similarly handle cases of contributory duplicative over-determination. To illustrate, it is helpful to return to the example of the house that is burned down and, upon investigation, it is found that: (1) the fire that started in the back garden is independently sufficient to have caused the damage; and (2) the fire started in the bedroom was insufficient independently to have caused damage to the neighbours' house, but nonetheless becomes sufficient when fused with the fire from the back garden. Using Mackie's INUS analysis, each fire is an insufficient but necessary part of a set of conditions that is unnecessary but is sufficient for the effect. That is, on the INUS analysis, it is immaterial that there is more than one sufficient set because there is no requirement that the set be necessary and sufficient for the effect.[72] Although there are some philosophical discrepancies between Wright's NESS test and Mackie's INUS test,[73] these are not significant for our purposes. The thesis that follows, however, will preferentially use Wright's NESS test over Mackie's INUS test only because the NESS test is conceptually easier to apply.[74]

[3.0] Some Quantitative Approaches to Determining Causation

[3.1] Introduction

So far this chapter has examined non-quantitative approaches to interrogating causation—based on the qualities of necessity and/or sufficiency. This thesis will also use two quantitative tests to interrogate causation. These include the Statistical Significance Test as well as Linear Regression Analysis. The first test measures the probability that the effect was brought about by random chance alone; while the second measures the probability that one variable had a causal effect on another variable. These tests provide the fact-finder with an indication of the level of confidence that one variable has a causal relationship with another variable.

[3.2] The Statistical Significance Test

In order to demonstrate the operation of the Statistical Significance Test, this section will start with a practical example. Imagine that, in addition to the house of Adam's neighbours, a number of other houses have been burnt down in Adam's local neighbourhood as a result of other residents negligently burning

[72] Moore (n 27) 416.
[73] See Richard W Wright, 'The NESS Account of Natural Causation: A Response to Criticisms' in Benedikt Kahmen and Markus Stepanians (eds), *Critical Essays on Causation and Responsibility* (Walter de Gruyter 2013) 17–18.
[74] Judea Pearl, *Causality, Models, Reasoning, and Inference* (CUP 2000) 314.

things on their property. Accordingly, the local Council introduces the Residential Fire Regulation, which makes it illegal to burn things on any property in the area, except where the resident has a permit from the Council and has attended adequate fire safety training. A year after the Council introduces this regulation, they find that the number of fires in the local area has fallen sharply. The Council would like to determine whether the Residential Fire Regulation contributed to reducing fires in the local area.

The Statistical Significance Test is used to determine the probability that the relationship between two variables is simply due to random chance.[75] More specifically, it interrogates whether the null hypothesis should be rejected or retained. The null hypothesis is a default position that there is no relationship between the independent and dependent variables.[76] The null hypothesis may be rejected if the p-value is less than the significance level (represented as α).[77] The p-value is the probability of observing a causal relationship between the two variables given that the null hypothesis is true.[78] The significance or α level is the probability of rejecting the null hypothesis when the null hypothesis is nonetheless true.[79] The 'alternative hypothesis', in contrast to the null hypothesis, provides a statement that one variable has a causative effect on another variable.[80] As is customary, the null hypothesis in this example will be set at 5% (that is, 0.05).[81] This means that if the result of the SST is less than 5%, the null hypothesis should be rejected.[82]

To apply the SST to the present case, the following assumptions can be made:

- each house that burns down does so independently (eg, the fire started in one house does not cause a series of houses in a row to burn down); and
- each house is sampled in a uniformly random way.

With these assumptions in view, imagine that the local Council had collected the following data:

- during the ten years prior to the introduction of the Residential Fire Regulation, 12 properties out of every 1,000 properties sampled was burnt down every year, meaning that 1.2% of properties was incinerated; and
- one year after the introduction of the Residential Fire Regulation, 3 properties (k) out of the 1,000 properties (n) sampled were burnt down, which makes the percentage of properties that were incinerated 0.3%.

Based on this data, it is possible to formulate hypotheses about the causal relationship between the Residential Fire Regulation and the reduction in the number of houses burnt down. It is customary to

[75] Kevin R Murphy, Brett Myors and Allen Wolach, *Statistical Power Analysis: A Simple and General Model for Traditional and Modern Hypothesis Tests* (4th ed, Routledge 2014) 2–3.
[76] Perry R Hinton, *Statistics Explained* (3rd ed, Routledge 2014) 33.
[77] Geoff Cumming and Robert Calin-Jageman, *Introduction to the New Statistics: Estimation, Open Science, and Beyond* (Routledge 2017) 129.
[78] ibid.
[79] Hinton (n 69) 35.
[80] Murphy, Myors and Wolach (n 68) 5.
[81] Hinton (n 69) 83.
[82] ibid 80.

formulate both a 'null hypothesis' and an 'alternative hypothesis' before conducting the SST. The null hypothesis and alternative hypothesis as applied to the Council's Residential Fire Regulation might be stated as follows:

- The *null hypothesis*, based on the data provided, is that there is no relationship between the introduction of the Residential Fire Regulation and the reduction in the number of properties burnt down. This means that, even after the introduction of the Residential Fire Regulation, the probability of a house being burnt down within the sample size per year is p = 1.2%.
- The *alternative hypothesis* based on the data provided is that the Residential Fire Regulation contributes to a reduction in properties burnt down.

The null hypothesis and alternative hypothesis are represented in the following graph. If the number of houses incinerated falls within the area shaded blue, then the null hypothesis is to be considered true. If, on the other hand, the number of houses incinerated falls within the area shaded red, then the alternative hypothesis must be held to be true:

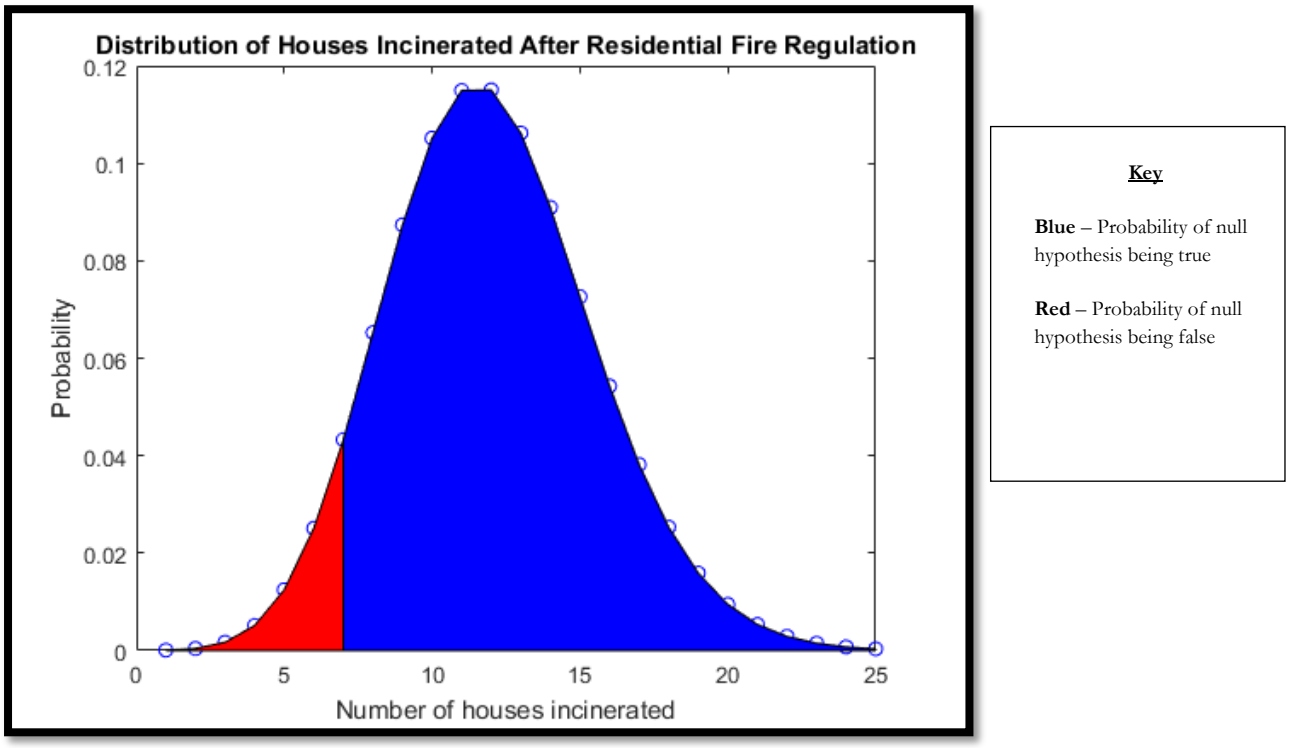

Figure 8: Binomial distribution of the probability of the number of houses incinerated based on the null hypothesis

The expectation value (η) is the size of the sample multiplied by the probability that a house will be burnt down. Under the null hypothesis, the expectation value is 12 for a sample size of 1,000. This can be expressed mathematically as follows: Expectation value (η) = n*p = 12.

Based on the data, we want to calculate the probability that the number of properties burnt down per 1,000 properties sampled (n) is less than or equal to 3 if the probability for each house to burn down is $p = 1.2\%$. In statistical terms, this can be written as follows: $P(x \leq 3|p = 1.2\%)$.

The probability of exactly x houses being burnt down can be calculated using the binomial distribution:

$$P(x) = \binom{n}{x} p^x (1-p)^{n-x}$$

The probability of getting less than or equal to 3 properties burnt down per 1,000 properties sampled without the policy intervention may be calculated as follows:

$$P(x \leq 3|p = 1.2\%) = \sum_{a=0}^{3} P(x = a) = \sum_{a=0}^{3} \binom{n}{a} p^a (1-p)^{n-a}$$

$$= \sum_{a=0}^{3} \binom{1000}{a} 0.012^a 0.988^{1000-a} = 0.2\%$$

Given that 0.2% is less than 5%, the null hypothesis must be rejected. In other words, it is highly unlikely that the relationship between the Residential Fire Regulation and the reduction in the number of local houses burnt down is due to random chance.

[3.3] Linear Regression Analysis

Linear regression analysis is a method of interrogating the relationship between two or more variables. As with the SST, it is helpful to explain the utility of the regression analysis with the practical example that has punctuated this chapter. Imagine that the neighbourhood next to Adam's (called Sylvania) has also been having problems with residential fires. Sylvania Council hears about the impact of the Residential Fire Regulation in Adam's neighbourhood and it decides to introduce the same regulation in Sylvania in 2016. One year after Sylvania's introduction of the Residential Fire Regulation, the Sylvania Council has noticed a drop in the number of fires in its neighbourhood and would also like to know whether the Residential Fire Regulation is responsible for the drop. Sylvania collects the following data:

Year	Number of Houses Burnt Down in Sylvania
2012	42
2013	40
2014	36
2015	29
2016	28
2017	8

Figure 9: Table of the number of houses burnt down in Sylvania from 2012 – 2017

This data can be graphed as follows:

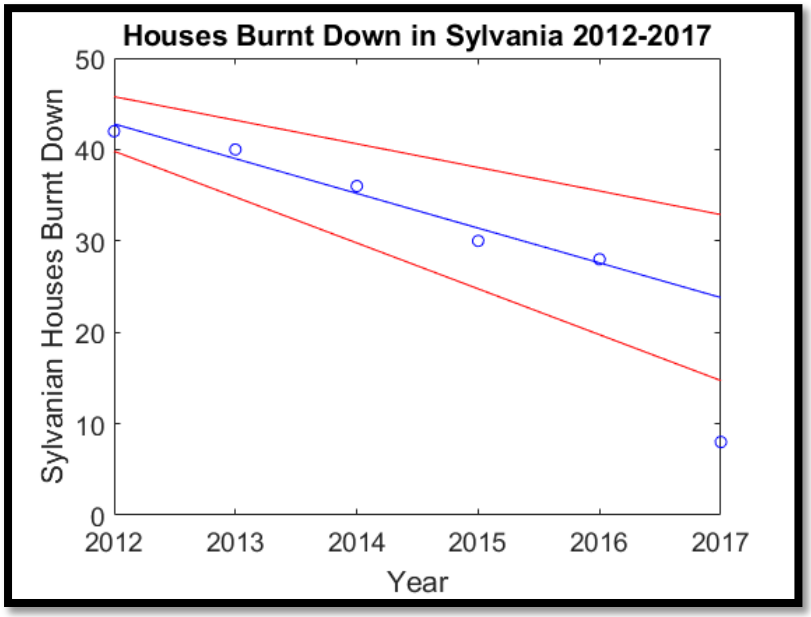

Figure 10: Graph of the number of houses burnt down in Sylvania from 2012 – 2017

The assumptions for this linear regression analysis are as follows:

- any uncertainties arising from potentially confounding factors in the data are the same for each value point on the graph;
- the uncertainties arising from potentially confounding factors for each value point must be independent of each other; and

- a linear fit to the data is the simplest model for the data.

The central blue line is a 'least-square fit line' or 'regression line', which means that it is the line that is 'closest' to fitting all of the value points.[83] This means that it is the line that best optimises or 'fits' with the value points. The purpose of this is to demonstrate where the value point for 2017 would be if the Residential Fire Regulation had no influence on the number of houses in Sylvania that were burnt down. That is, it would be expected that the value point for 2017 would correspond to the extrapolated line in Figure 10. Here, we are therefore not only comparing the number of houses burnt down to the average number of houses burnt in recent years, but we are also considering long-term trends in the data like a slow decline in the number of houses burnt down during the period 2012 – 2016. It can be seen from the above graph that, following Sylvania's Residential Fire Regulation in 2017, the value point is markedly lower than where the extrapolated line would suggest. This departure from the trajectory of the extrapolated line indicates that the number of houses burnt down after Sylvania's introduction of the Residential Fire Regulation is fewer than would be expected.

The blue and red lines on either side of the 'least-square fit lines' indicate the range of statistical significance. As before, we can formulate two hypotheses:

- a *null hypothesis*, which provides that there is no causal relationship between the Residential Fire Regulation and the reduction in the number of houses burnt down in Sylvania; and
- an *alternative hypothesis*, which is that the Residential Fire Regulation contributed to a reduction in the number of houses burnt down in Sylvania.

As above, the significance value (represented as α) will be set at 5% or 0.05—though it may be recalled from the above that the significance value may potentially be set at any value. Where a Member's data falls within the statistical significance lines, it must be said that the drop in data values is not considered statistically significant for the purpose of this model. Accordingly, for this reason, the null hypothesis must be accepted.

The benefits of using a quantitative approach to analysing the above data are considerable. First, using a linear regression analysis allows the fact-finder to see graphically the difference between the extrapolated least-square fit line and the data after the introduction of the Residential Fire Regulation. This difference represents the likely number of houses that would have been burnt down were it not for Sylvania Council's decision to introduce the Residential Fire Regulation. In this sense, an extrapolation of the trajectory of the least-square fit line serves as a kind of graphical equivalent to the non-quantitative *sine qua non* test, in the sense that one can see graphically what the likely data is 'but for' the intervention of the measure. Moreover, adopting a quantitative approach has the additional benefit of applying the Statistical Significance Test to

[83] Xin Yan and Xiao Gang Su, *Linear Regression Analysis: Theory and Computing* (World Scientific 2009) 11–12.

the data so that the probability that the Residential Fire Regulation caused the drop in the number of houses can be determined with greater accuracy. The SST also enables the fact-finder to determine when it is reasonable to search for an alternative confounding factor that may have also contributed to the decline in the incineration of houses.

[4.0] Conclusion

The causal approaches canvassed here are tailored to suit different aspects of interrogating causation. It is argued that the causal questions embedded into WTO law require non-quantitative and quantitative forms of causal analysis. The two non-quantitative tests that have been discussed in this chapter are the *sine qua non* test and the weak necessity/strong sufficiency test. The *sine qua non* test is a heuristically simple tool that can quickly identify whether a particular injury would have come about in the absence of the specific causal agent. It has been seen, however, that the *sine qua non* test has a number of limitations that make it ill-suited to particular causal contexts. The weak necessity/strong sufficiency test is in many ways a panacea to the problems that beset the *sine qua non* test. Nonetheless, the weak necessity/strong sufficiency test is less heuristically simple than the *sine qua non* test because it requires the fact-finder to set up a set. Both the *sine qua non* test and the weak necessity/strong sufficiency test, then, have different strengths and limitations and their use should be guided by the nature of the particular causal problem at hand.

In addition to these non-quantitative causal tests, it will be argued that some of the causal questions raised in WTO law are better interrogated using quantitative causal tests. The quantitative tests can demonstrate with more precision than non-quantitative causal tests what difference a particular phenomenon made to an outcome. That is, whilst both the *sine qua non* test and the weak necessity/strong sufficiency test can isolate what made a difference to a result, they cannot say precisely *how much* of a difference the phenomenon made. The SST is particularly suited to making this assessment, as it can determine the probability that the effect of a particular phenomenon occurred by pure chance. Second, whereas the non-quantitative tests are mainly directed at interrogating causation retrospectively, quantitative tests are more suited to predicting future causation, since they can make extrapolations based on a past data set. For example, the Linear Regression Analysis can be used to show the likely future trajectory of a phenomenon based on the previous value points up to that point. This is particularly useful when a fact-finder must make a decision about future effects, as will be discussed in Chapter IV.

Given that determining causation is inherently difficult and requires a significant amount of specialised knowledge, this chapter has provided some theoretical background and has explained the two non-quantitative and two quantitative causal tests that are arguably best suited to interrogating the concept of causation in WTO law. The next four chapters will each analyse the current approach in the jurisprudence to interrogating causation and will also propose alternative approaches that draw heavily on the theories and causal tests that were explained in this chapter.

Chapter II:
Trade Remedies

[1.0] Introduction

WTO law offers three forms of remedies to protect a domestic industry against the injurious effects of imports: safeguard measures,[84] antidumping measures[85] and countervailing duties[86] (collectively, 'trade remedies'). Safeguard measures temporarily restrict imports of a product so as to protect a specific domestic industry from an increase in imports of any product that is causing, or threatening to cause, serious injury to the industry.[87] Antidumping measures, on the other hand, are introduced as a means of counteracting the injurious effects of products that are sold to another Member at 'less than the normal value of the product'.[88] Finally, countervailing duties are introduced so as to protect a domestic industry from exporters or producers whose products benefit from a government subsidy that causes or threatens to cause injury to the industry in the importing country.[89] Trade remedies serve as conditional exceptions to the principle that a Member cannot discriminate between its trading partners,[90] which makes their use controversial, as many theorists see them as distorting markets.[91] A discussion of the economic policy implications of trade remedies is, however, beyond the scope of this thesis.

Due to the distorting effects of trade remedies, their use is subject to the satisfaction of stringent criteria. While the relevant criteria of the trade remedies agreements will be detailed below, each has two key requirements at their heart that must be fulfilled in order for the trade remedies to be legally implemented. The first is a requirement to determine that it is the imports that have caused the injury to the domestic industry (the causation limb). The second is to ensure that the injury to a Member's domestic industry was not caused by some factor other than imports (the non-attribution limb). Importantly, each of these analyses is performed by a Member's domestic competent authority. It is only if the analysis that is performed by

[84] Safeguards Agreement (n 6).
[85] AD Agreement (n 7).
[86] SCM Agreement (n 8).
[87] Article 2.1 of the Safeguards Agreement (n 6).
[88] Article VI:1 of the GATT Agreement (n 9). See generally, Richard Boltuck, 'An Economic Analysis of Dumping' (1987) 21(5) JWT 45.
[89] SCM Agreement (n 8) Article 15.5.
[90] Specifically, the Safeguards Agreement (n 6) allows Members to depart from the disciplines of Articles III and XI of the GATT 1994 (n 9); and the AD Agreement (n 7) and Article 15 of the SCM Agreement (n 8) serve as permitted exceptions to Article II:1 of the GATT 1994 (n 9).
[91] See generally, Alan O Sykes, 'International Trade: Trade Remedies' in Alan O Sykes and Andrew Guzman (eds), *Research Handbook in International Economic Law* (Edward Elgar 2007); Petros C Mavroidis, Patrick A Messerlin and M Wauters, *The Law and Economics of Contingent Protection in the WTO* (Edward Elgar 2008) in respect of Antidumping measures, see 7–29; in respect of countervailing duties, see 399–400; and in respect of safeguard measures, see 468–75; see generally, Tania Voon, 'Eliminating Trade Remedies from the WTO: Lessons from Regional Trade Agreements' (2010) Int'l & Comp L Q 59.

the domestic competent authority is challenged by another Member that a WTO Panel or the AB would be required to review the analysis of the domestic competent authority.

Despite the obvious benefits of having clear guidance about how the causation and non-attribution limbs are to be interpreted, both the jurisprudence and academic commentary evidence a degree of confusion and Members have called for clarification in respect of the relevant provisions of all of the trade remedies agreements.[92] Moreover, in the Doha Ministerial Declaration, WTO Members agreed to undertake:

> negotiations aimed at clarifying and improving disciplines under the Agreements on Implementation of Article VI of the GATT 1994 and on Subsidies and Countervailing Measures, while preserving the basic concepts, principles and effectiveness of these Agreements and their instruments and objectives, and taking into account the needs of developing and least-developed participants.[93]

This confusion has two fundamental sources. First, many commentators query the economic assumptions that are embedded in the drafting of Article 4.2 of the Safeguards Agreement, Article 3.5 of the Antidumping Agreement and Article 15.5 of the SCM Agreement ('the provisions'). In particular, the provisions are drafted so as to reflect the premise that imports are a source of injury to a domestic industry. Several commentators, however, have noted that imports are a function of consumer tastes and habits, and therefore, that it is more accurate to say that it is a change in consumer tastes and habits via imports that

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[92] See generally, Nedumpara (n 14) ch 6; Jorge Miranda, 'Causal Link and Non-Attribution as Interpreted in WTO Trade Remedy Disputes' (2010) 44(4) JWT 729. In respect of the Safeguards Agreement, see the call for clarification on Article 4.2 of the Safeguards Agreement: WTO, Dispute Settlement Body, Minutes of Meeting Held in the Centre William Rappard (16 May 2001) WT/DSB/M/105, 19 June 2001, <http://www.puntofocal.gov.ar/doc/dsb-m337.pdf> accessed 30 April 2014, at para 46, per Japan and para 49 per Hong Kong, China. See also Lacey (n 14); Chad P Bown, 'Why are Safeguards Under the WTO So Unpopular?' (2002) 47 WTR 47; In respect of the AD Agreement and Article 15.5 of the SCM Agreement, see Negotiating Group on Rules, Paper by Friends of Antidumping, Antidumping: Illustrative Major Issues, TN/RL/W/6 (April 26, 2002); WTO Negotiating Group on Rules, Second Submission of India: Antidumping Agreement, TN/RL/W/26 (October 17, 2002); Call for Clarification on Article 3.5 of the AD Agreement: WTO, Negotiating Group on Rules, *Causation: Communication from Egypt*, TN/RL/GEN/140, 6 June 2006, <http://www.jmcti.org/2000round/com/doha/tn/rl/tn_rl_gen_140.pdf> accessed 30 April 2014; WTO, Negotiating Group on Rules, *General Contribution to the Discussion of the Negotiating Group on Rules on AD Measures, Paper from Brazil; Chile; Colombia; Costa Rica; Hong Kong, China; Israel; Japan; Korea; Norway; Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu; Thailand; and Turkey*, TN/RL/W/28, 15 November 2002, <http://www.meti.go.jp/policy/trade_policy/wto/wto_db/data/ad_gcon0212e.pdf> accessed 30 April 2014; WTO, Negotiating Group on Rules, *Second Submission of Proposals on the Determination of Injury, Paper from Brazil; Chile; Colombia; Costa Rica; Hong Kong, China; Israel; Japan; Korea, Rep. of; Norway; Singapore; Switzerland; the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu; and Thailand*, TN/RL/GEN/38, 23 March 2005, <http://www.pc.gov.au/__data/assets/pdf_file/0015/90204/sub026-attachmentb.pdf> accessed 30 April 2014; WTO, Negotiating Group on Rules, *Causation (AD Agreement Article 3.5; SCM Agreement Article 15.5): Communication from the United States*, TN/RL/GEN/128, 24 April 2006, <http://www.jmcti.org/2000round/com/doha/tn/rl/tn_rl_gen_128.pdf> accessed 30 April 2014; in respect of Article 15.5 of the SCM Agreement, see WTO, Negotiating Group on Rules, *Causation (AD Agreement 3.5; SCM Agreement Article 15.5): Communication from the United States*, TN/RL/GEN/128, 24 April 2006, <http://www.jmcti.org/2000round/com/doha/tn/rl/tn_rl_gen_128.pdf> accessed 30 April 2014; Communication from the United States, Identification of Additional Issues Under the Antidumping and Subsidies Agreements, TN/RL/W/98 (May 6, 2003); Communication from the United States, Causation (*AD Agreement 3.5; SCM Agreement Article 15.5*), TN/RL/GEN/59 (July 13, 2005). Marc Benitah, *The Law of Subsidies under the GATT/WTO System* (Kluwer 2001) 281–304 and Marc Benitah, 'From Economic Complexity to Legal Indeterminacy: Causality between Subsidy and Injury' (1999) 33(1) JWT 87.

[93] WTO, Ministerial Declaration of 14 November, 2001, WT/MIN (01)/DEC/1, 41 ILM 746 (2002) (Doha Declaration).

cause injury.[94] This economic debate is beyond the scope of this chapter. Moreover, any discussion of the jurisprudence relating to findings of temporal and other sources of correlation between imports and other injurious factors is also beyond the scope of this chapter, since this jurisprudence essentially relates to the same economic debate.[95]

This chapter instead concerns itself with the secondary source of confusion raised by the provisions. This relates to the lack of a clear and consistent methodology for domestic competent authorities to use in order to: (a) separate the effects of imports from other injurious factors; and (b) make a determination as to whether the injurious effects of the imports are sufficient to reach the requisite injury threshold, as is required by the provisions. In adopting this focus, the chapter starts from the basic assumption that the economic premise embedded in the provisions of the trade remedies agreements is justified—namely, that imports are causal. In the alternative, this chapter argues that, even if the provisions are indeed 'economically fallacious',[96] a fact-finder is still required to follow the guidance in the jurisprudence as to how they are to be interpreted until such time as the provisions are either redrafted (which seems unlikely) or the jurisprudence signals a radically new interpretation.

This chapter begins by setting out the provisions and examining the relevant jurisprudence relating to the provisions. The chapter will then turn, in Section [3.0], to consider the way in which some domestic competent authorities have approached the non-attribution and causation analysis, using the 'breaking the causal link approach'. This involves making an assessment as to whether there is a causal link between imports and market injury before turning to consider whether such a causal link has been broken based on the non-quantitative features of injurious factors other than imports. Despite the fact that a recent Panel decision affirms the 'breaking the causal link approach', this chapter will argue against this approach and will detail, instead, an approach that involves econometric analysis that was put forward by the AB in *US—Wheat Gluten.*

Despite the different economic rationales for each of the trade remedies, the relevant Panels and the AB have demonstrated a willingness to draw analogies between the provisions, due to similarities in their drafting. This chapter will continue this willingness to draw parallels between the provisions, as it contends that the non-attribution and causation limbs that are embedded in the provisions should be approached using the same three-step process which will be detailed below, with different permutations to account for their diverse economic rationales. Drawing on the AB's willingness to find interpretive parallels between

[94] For this view, see generally, Sykes, 'The Causation Requirement' (n 13); Sykes, 'The Safeguards Mess' (n 13); Fernando Piérola, 'Causal Link' in *The Challenge of Safeguards in the WTO* (CUP 2014); Kenneth Kelly, 'An Analysis of Causality in Escape Clause Cases' (1988) 37(2) J Ind Econ 187; Pindyck and Rotemberg (n 13); and Ronald A Cass and Michael S Knoll, 'The Economics of "Injury"' in Jagdeep S Bhandari and Alan O Sykes (eds), *Antidumping and Countervailing Duty Cases: A Reply to Professor Sykes, Economic Dimensions in International Law: Comparative and Empirical Perspectives* (CUP 1997); and Richard D Boltuck, 'An Economic Analysis of Dumping' (1987) 21(5) JWT 45.
[95] For a general overview of the jurisprudence related to temporal and other sources of correlation between imports and other injurious factors, see generally, Miranda (n 85).
[96] Sykes, 'The Causation Requirement' (n 13) 191.

the provisions, Sections [4.0] and [5.0] of the chapter largely consider the non-attribution and causation requirements of the provisions together. The different economic policies underlying each of the three agreements is nonetheless reflected in the *de minimis* threshold that forms part of the causation analysis.

It is argued that the heart of the difficulty with the provisions in question is that they are focused on finding causation between factors at the same time as they are focused on excluding causation between factors. It follows from this dual character that any useful causal test must be able reliably to discriminate between those factors that were relevant to bringing about harm to a Member's domestic industry and those factors that were immaterial to producing such injury. The chapter concludes by reflecting upon how such interpretative choices ultimately have policy implications for the WTO's aspirations to maintain a 'level playing field' amongst its Members.[97]

[2.0] Jurisprudence Concerning Non-Attribution and Causation with respect to Safeguards, Antidumping Measures and Countervailing Duties

[2.1] Safeguards

Article 2.1 of the Safeguards Agreement sets out the conditions under which a WTO Member may introduce safeguards. It provides that:

> A Member may apply a safeguard measure to a product only if that Member has determined (…) that such product is being imported into its territory in such increased quantities, absolute or relative to domestic production, and under such conditions as to cause or threaten to cause serious injury to the domestic industry that produces like or directly competitive products.

It is important to note that the focus of Article 2.1 exclusively relates to the harm to domestic industry caused by increased imports *alone*.

Article 4 of the Safeguards Agreement sets out the process by which domestic competent authorities must determine how the threshold, 'serious injury or threat thereof' might be calculated. As the wording of Article 4.2(a) and (b) is critical, it will be set out here in full:

(a) In the investigation to determine whether increased imports have caused or are threatening to cause serious injury to a domestic industry under the terms of this Agreement, the competent authorities shall evaluate all relevant factors of an objective and quantifiable nature having a bearing on the situation of that industry, in particular, the rate and amount of the increase in imports of the product concerned in absolute and relative terms, the share of the domestic market taken by increased imports, changes in the level of sales, production, productivity, capacity utilization, profits and losses, and employment.

(b) The determination referred to in subparagraph (a) shall not be made unless this investigation demonstrates, on the basis of objective evidence, the existence of the causal link between increased imports of the product concerned and serious injury or threat thereof. When factors other than

[97] *The Future of the WTO: Introducing Institutional Challenges in the New Millennium,* Report by the Consultative Board to the Director-General Supachai Panitchpakdi by Peter Sutherland, Jagdish Bhagwati, Kwesi Botchwey, Niall FitzGerald, Koichi Hamada, John H Jackson, Celso Lafer and Thierry de Montbrial (WTO 2004) 15.

> increased imports are causing injury to the domestic industry at the same time, such injury shall not be attributed to increased imports.

For convenience, this chapter and this thesis more broadly will refer to all those factors other than the specific source of injury under investigation (in this case, increased imports) by the short-form, 'potentially confounding factors'. For the avoidance of doubt, Article 4.2(a) is not an exhaustive list of potentially confounding factors; and, therefore, potentially confounding factors might include, but not be limited to, this list. In determining the causal link between increased imports and injury to domestic industry, it is clear that Article 4.2 has a much broader focus than Article 2.1. That is, Article 4.2 is concerned with the impact of *both* increased imports *and* the impact of potentially confounding factors on a domestic industry.

The first time that a Panel was required[98] to consider whether a domestic competent authority had satisfactorily demonstrated the causal link between increased imports and 'serious injury or threat thereof' under the Safeguards Agreement was in *US—Wheat Gluten*.[99] In that case, the *US—Wheat Gluten* Panel held that a WTO Member must:

> demonstrate that the increased imports, under the conditions extant in the marketplace, *in and of themselves*, cause *serious injury*. This is not to say that the imports must be the sole causal factor present in a situation of serious injury. (…) However, the increased imports must be sufficient, in and of themselves, to cause injury which achieves the threshold of 'serious' as defined in the Agreement. (…) In our view, where a number of factors, one of which is increased imports, are sufficient *collectively* to cause a 'significant overall impairment of the position of the domestic industry', but increased imports alone are not causing injury that achieves the threshold of 'serious' within the meaning of Article 4.2(a) of the Agreement, the conditions for imposing a safeguard measure are not satisfied.[100]

This idea that increased imports would be the sole reason to introduce safeguards will be referred to, throughout this chapter, as the 'sufficiency of imports approach'. To illustrate the 'sufficiency of imports approach', it is helpful to think of the injury threshold as a kind of horizontal line along a y-axis. Depending on the nature of the imports, the imports will either reach this horizontal line or not. This may be seen in Figure 11 below:

[98] Although causation under the Safeguards Agreement was first considered by the Panel in WTO, *Argentina: Safeguard Measures on Imports of Footwear—Report of the Panel* (25 June 1999) WT/DS121/R (Panel, *Argentina—Footwear (EC)*), the Panel was not technically required to consider it. As the AB observed, the Panel had found no increased imports and no serious injury or threat thereof, and therefore it was 'surpris[ing]' that the Panel went on to consider causation in that Panel report: WTO, *Argentina: Safeguard Measures on Imports of Footwear—Report of the Appellate Body* (14 December 1999) WT/DS121/AB/R (AB, *Argentina—Footwear (EC)*) [145].

[99] WTO, *United States—Definitive Safeguard Measures on Imports of Wheat Gluten from the European Communities—Report of the Panel* (31 July 2000) WT/DS166/R (Panel, *US—Wheat Gluten*).

[100] ibid [8.138]–[8.139] (emphasis original).

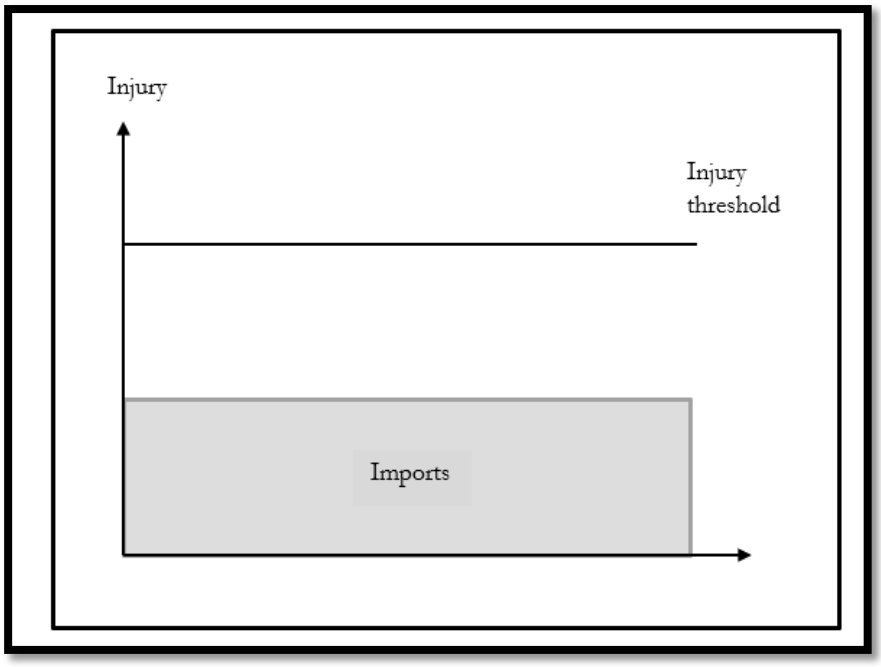

Figure 11: Graphic illustration of the 'sufficiency of imports approach'

The *US—Wheat Gluten* Panel here reflects the 'sufficiency of imports' approach. That is, the Panel acknowledges that other causal factors may have contributed to the injury in question, but it contends that imports must be sufficient in and of themselves to reach the threshold of 'serious injury or threat thereof'. The *US—Lamb* Panel substantially repeated the sufficiency of imports approach in its report.[101]

Having examined the impact of the sufficiency of imports on the causation limb, it now remains to consider the impact of the sufficiency of imports approach on determining non-attribution. It will be recalled that the purpose of non-attribution in the safeguards context is to distinguish the impact of imports from other potentially confounding factors. A corollary of the sufficiency of imports approach is that the non-attribution limb of Article 4.2 is rendered largely redundant. That is, the Panel in *US—Lamb* found that:

> We cannot see how a causation standard that does not examine whether increased imports are both a *necessary* and *sufficient* cause for serious injury or threat thereof would ensure that injury caused by factors other than increased imports is not attributed to those imports.[102]

The language of the Panel in *US—Lamb* here is somewhat hard to follow. To rephrase the Panel's statement, in their view, if the sufficiency of imports approach is used, there is no possibility that potentially confounding factors will be falsely attributed with causing injury. This is because, under the sufficiency of imports approach, only the impact of imports is counted towards the injury threshold and therefore there is no possibility that potentially confounding factors could falsely be attributed with causing injury. In this sense, the interpretation of the Safeguard Panels does not treat the non-attribution and causation elements

[101] WTO, *United States: Safeguard Measures on Imports of Fresh, Chilled or Frozen Lamb Meat from New Zealand and Australia—Report of the Panel* (21 December 2000) WT/DS177/R and WT/DS178/R (Panel, *US—Lamb*) [7.238].
[102] ibid [7.241] (emphasis original).

in Article 4.2(a) and (b) as separate considerations, but fuses them together into one analysis. Accordingly, on the Panels' interpretation, the non-attribution analysis is largely a *fait accompli* depending on the result of the causation analysis. Indeed, it is revealing that the *US—Wheat Gluten* Panel speaks in its report of 'read[ing] together' the two requirements in Article 4.2(a) and (b).[103]

The AB disagreed with the sufficiency of imports approach taken by the Safeguard Panels, leading it to overturn both the non-attribution and causation limbs of the Panel reports. Specifically, the AB in *US—Wheat Gluten* said that:

> The language in the first sentence of Article 4.2(b) does *not* suggest that increased imports be *the sole* cause of the serious injury, or that '*other* factors' causing injury must be excluded from the determination of serious injury. To the contrary, the language of Article 4.2(b), as a whole, suggests that 'the causal link' between increased imports and serious injury may exist, *even though other factors are also contributing 'at the same time', to the situation of the domestic industry.*[104]

It is convenient to call this approach by the short-form, 'multi-factorial approach'. An illustration of the 'multi-factorial approach' may be seen graphically below:

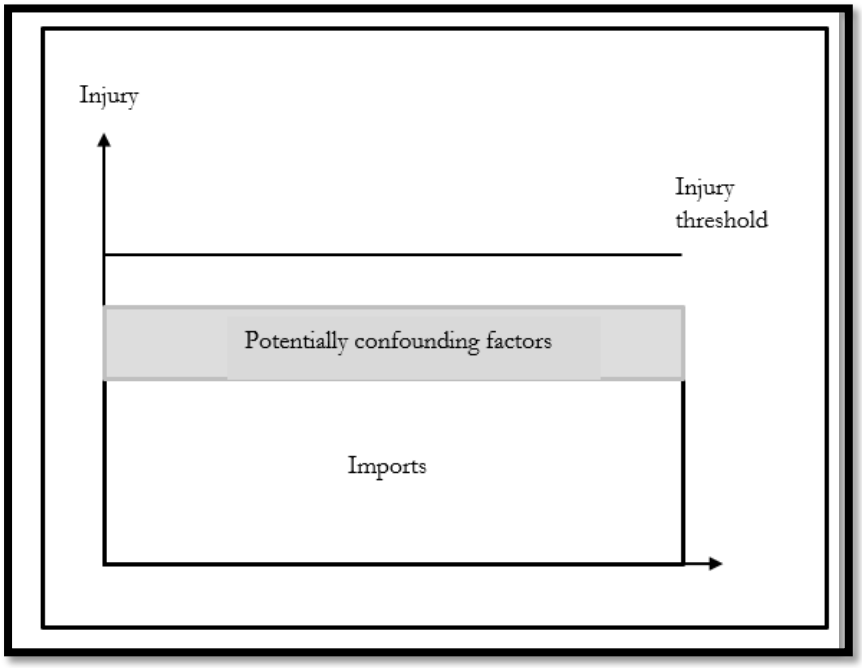

Figure 12: Graphic illustration of the 'multi-factorial approach'

A comparison of Figures 11 and 12 above confirms that it is easier to reach the injury threshold when the multi-factorial approach is used than when the sufficiency of imports approach is used. This is because, under the multi-factorial approach, *both* imports *and* potentially confounding factors might be combined together to reach the injury threshold. The sufficiency of imports approach, however, would require that the injury threshold is reached using imports *alone*. It follows from this that causation is more easily made

[103] Panel, *US—Wheat Gluten* (n 92) [8.138].
[104] AB, *US—Wheat Gluten* (n 12) [67] (emphasis original).

out using the multi-factorial approach. In this sense, the question of which approach to use has profound policy implications. That is, if the injury threshold approach is easier to reach using the multi-factorial approach, this means, in turn, that safeguard measures (and their concomitant trade-distortive effects) will be easier to justify than when the sufficiency of imports approach is used.

The AB repeated this multi-factorial approach to interpreting Article 4.2 in its *US—Lamb* report. It confirmed that 'the *Agreement on Safeguards* does not require that increased imports be "sufficient" to cause, or threaten to cause, serious injury.'[105] A second effect of the AB's approach in both *US—Wheat Gluten* and *US—Lamb* is that domestic competent authorities must separate and distinguish the harm caused by increased imports from those caused by potentially confounding factors.[106] The purpose of this process is to assist with carrying out the non-attribution analysis—namely, ensuring that harm caused by potentially confounding factors is not falsely attributed to the harm produced by increased imports.[107] A discussion of how these harms are, and could be, separated will be discussed below in the discussion of non-attribution at Section [4.0].

In contrast to the fused interpretation of non-attribution and causation discussed in relation to the Safeguard Panel reports above, the AB distinguished non-attribution and causation as *separate* analyses in its reports. Indeed, the AB in *US—Wheat Gluten* described the process of carrying out the non-attribution and causation analyses as a three-step process.[108] The AB in *US—Wheat Gluten* enumerated the three steps as follows: (1) the injurious effects of increased imports must be separated from the injurious effects produced by potentially confounding factors; (2) authorities must then attribute to imports the harm they alone have produced before attributing to potentially confounding factors the harm that they have occasioned in turn; and (3) finally, a determination must be made as to whether there is a causal link between imports and 'serious injury or threat thereof'; and if so, whether such a causal link involves a 'genuine and substantial relationship of cause and effect' between these two elements.[109] Whilst a discussion of how these steps will be applied will be set out in Section [4.0] below, it is sufficient at this point simply to note that the non-attribution analysis is by no means a *fait accompli* once the causation analysis has been done under the multi-factorial approach, but rather, an entirely separate and very rigorous process.

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[105] WTO, *United States: Safeguard Measures on Imports of Fresh, Chilled or Frozen Lamb Meat from New Zealand and Australia—Report of the Appellate Body* (1 May 2001) WT/DSS177/AB/R; WT/DS178/AB/R (*AB, US—Lamb)* [170].
[106] AB, *US—Wheat Gluten* (n 12) [68]. This process was reaffirmed in AB, *US—Lamb* (n 98) [167]–[68]; WTO, *United States: Definitive Safeguard Measures on Imports of Circular Welded Carbon Quality Line Pipe from Korea—Report of the Appellate Body* (15 February 2002) WT/DS202/AB/R (AB, *US—Line Pipe*) [215].
[107] AB, *US—Wheat Gluten* (n 12) [69]; AB, *US—Lamb* (n 98) [179]–[80].
[108] AB, *US—Wheat Gluten* (n 12) [69].
[109] ibid.

[2.2] Antidumping Measures

Mirroring Article 2.1 of the Safeguards Agreement, Article 3.1 of the Antidumping Agreement also provides that, before implementing an antidumping measure, a domestic competent authority should determine whether there is a causal link between the dumped imports and harm to domestic industry. Article 3.1 of the Antidumping Agreement provides as follows:

> A determination of injury for purposes of Article VI of GATT 1994 shall be based on positive evidence and involve an objective examination of both (a) the volume of the dumped imports and the effect of the dumped imports on prices in the domestic market for like products, and (b) the consequent impact of these imports on domestic producers of such products.

As with Article 2.1 of the Safeguards Agreement, Article 3.1 of the Antidumping Agreement is exclusively focused on the injury inflicted on domestic industry by imports alone—in this case, dumped imports. Article 3 of the Antidumping Agreement sets out the process by which such injury is to be determined. Further mirroring Article 4.2 of the Safeguards Agreement, Article 3.5 of the Antidumping Agreement contains a provision that is also directed at performing a non-attribution and causation analysis simultaneously. Article 3.5 of the Antidumping Agreement provides:

> It must be demonstrated that the dumped imports are, through the effects of dumping, as set forth in paragraphs 2 and 4, causing injury within the meaning of this Agreement. The demonstration of a causal relationship between the dumped imports and the injury to the domestic industry shall be based on an examination of all relevant evidence before the authorities. The authorities shall also examine any known factors other than the dumped imports which at the same time are injuring the domestic industry, and the injuries caused by these other factors must not be attributed to the dumped imports. Factors which may be relevant in this respect include, *inter alia*, the volume and prices of imports not sold at dumping prices, contraction in demand or changes in the patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry.

As with Article 4.2 above, this chapter will continue to use the term 'potentially confounding factors' as a short-form for causal factors other than dumped imports, such as those described in Article 3.5 (but not limited to them).

The *US—Hot Rolled Steel* Panel was the first to interpret Article 3.5 of the Antidumping Agreement. The Panel found that the AB report in *US—Wheat Gluten* bore 'directly and substantially' on its analysis.[110] Accordingly, the Panel followed it explicitly when it rejected the sufficiency of imports approach to interpreting Article 3.5.[111] Embracing the multi-factorial approach of the AB in *US—Wheat Gluten* instead, then, the *US—Hot Rolled Steel* Panel nonetheless did not follow the AB's insistence that domestic competent authorities rigorously separate and distinguish potentially confounding factors from dumped imports for the purposes of non-attribution. This departure from the AB report is not unreasonable given that the AB

[110] WTO, *United States: Antidumping Measures on Certain Hot-Rolled Steel Products from Japan—Report of the Panel* (28 February 2001) WT/DS184/R (Panel, *US—Hot Rolled Steel*) [7.258].
[111] ibid [7.258]–[7.261].

report concerned Article 4.2 of the Safeguards Agreement, rather than Article 3.5 of the Antidumping Agreement. Instead, the *US—Hot Rolled Steel* Panel agreed with the analysis in the *US—Atlantic Salmon* Panel report, where the latter had said that the domestic competent authority was not required to have 'identified the extent of injury caused by these other factors in order to isolate the injury caused by these factors from the injury caused by the imports'.[112] Accordingly, the *US—Hot Rolled Steel* Panel held that it was sufficient that the domestic competent authority had simply examined other known factors causing injury simultaneously and estimated their likely harm.[113]

While the multi-factorial approach adopted in relation to causation by the *US—Hot Rolled Steel* Panel was not appealed, the Panel's interpretation of the non-attribution limb of Article 3.5 of the Antidumping Agreement was appealed and ultimately overturned. The AB in *US—Hot Rolled Steel* held that the non-attribution analysis '[l]ogically (…) involve[d] separating and distinguishing the injurious effects of the other factors from the injurious effects of the dumped imports.'[114] In direct contradiction to the *US—Hot Rolled Steel* Panel's approval of the *US—Atlantic Salmon* Panel's analysis of non-attribution, the AB found that non-attribution 'requires a satisfactory explanation of the nature and extent of the injurious effects of the other factors, as distinguished from the injurious effects of the dumped imports.'[115] Finally, the AB acknowledged that its own approach to non-attribution in *US—Wheat Gluten* and *US—Lamb* 'fortified' its interpretation[116] despite the difference in drafting between the provisions.[117]

The Panel[118] and AB[119] in *EC—Tube or Pipe Fittings* followed the analysis of the non-attribution and causation limbs performed by the AB in *US—Wheat Gluten* and *US—Lamb*. Additionally, the AB considered whether the non-attribution test obliges the investigating authority not only to separate and distinguish the effect of each *individual* potentially confounding factor from the dumped imports, but also to separate and distinguish the *collective* effect of potentially confounding factors aggregated together from the dumped imports.[120] The AB acknowledged the possibility of needing to separate the collective effect of potentially confounding factors in a qualified way. It said that it was not necessary for competent authorities to perform such a collective assessment in every case;[121] but that:

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[112] WTO, *United States: Imposition of Antidumping Duties on Imports of Fresh and Chilled Atlantic Salmon for Norway—Report of the Panel* (27 April 1994) ADP/87 [555] quoted in Panel, *US—Hot Rolled Steel* (n 103) [7.254].
[113] Panel, *US—Hot Rolled Steel* (n 103) [7.254]–[7.257].
[114] *United States: Antidumping Measures on Certain Hot Rolled Steel Products from Japan—Report of the Appellate Body* (24 July 2001) WT/DS184/AB/R (AB, *US—Hot Rolled Steel*) [223].
[115] ibid [226].
[116] ibid [229].
[117] ibid [230].
[118] WTO, *European Commission: Antidumping Duties on Malleable Cast Iron Tube or Pipe Fittings from Brazil—Report of the Panel* (7 March 2003) WT/DS219/R (Panel, *EC—Tube or Pipe Fittings*).
[119] WTO, *European Commission: Antidumping Duties on Malleable Cast Iron Tube or Pipe Fittings from Brazil—Report of the Appellate Body* (22 July 2003) WT/DS 219/AB/R (AB, *EC—Tube or Pipe Fittings*).
[120] ibid [185].
[121] ibid [191].

> depending on the facts at issue, an investigating authority could reasonably conclude, without further inquiry into *collective* effects, that 'the injury (…) ascribe[d] to dumped imports is actually caused by those imports, rather than by the other factors.' At the same time, we recognize that there may be cases where, because of the specified factual circumstances therein, the failure to undertake an examination of the collective impact of other causal factors would result in the investigating authority improperly attributing the effects of other causal factors to dumped imports.[122]

The AB did not elaborate on what 'the specified factual circumstances' might be in order for a collective assessment to be justified. It said only that such an assessment would be necessary when required to fulfil the 'obligation not to attribute to dumped imports the injuries caused by other causal factors'.[123] In any case, the effect of what the AB in *EC—Tube or Pipe Fittings* said is that the burden of persuasion would be on the party alleging the error in the other party's non-attribution analysis to show why a collective assessment was necessary.[124] Certainly, in the case before it at least, the AB found that Brazil had not adduced evidence to show why a collective assessment was necessary; and dismissed the issue accordingly.[125] Similarly, both the *US—Tyres (China)* Panel and the AB found against China's argument in favour of a collective assessment of potentially confounding factors in the *US—Tyres (China)* case.[126] Accordingly, it remains unclear what the circumstances justifying such collective assessment might be.

Further supporting the idea of the possible need for collective assessment of potentially confounding factors, the *EC—Tube or Pipe Fittings* Panel also said that it was:

> certainly aware of the theoretical possibility that a causation methodology which separates and distinguishes between individual injury factors may not accommodate the possibility that multiple 'insignificant factors' might *collectively* constitute a significant cause of injury such as to sever the link between dumped imports and injury.[127]

Moreover, the AB in *US—Hot Rolled Steel* agreed with the United States' submission that potentially confounding factors may interact with each other, producing combined and interrelated effects on the domestic industry that are greater than the sum of their parts.[128] These statements regarding the 'theoretical possibility' of an examination of the collective harm produced by other factors on the one hand and dumped imports on the other are significant. The difference in treatment that this approach would require from a causation perspective will be returned to when the non-attribution limb is considered in Section [4.0] below.

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[122] ibid [192] (emphasis original).
[123] ibid.
[124] ibid [194].
[125] ibid [194]–[195].
[126] WTO, *United States: Measures Affecting Imports of Certain Passenger Vehicle and Light Truck Tyres from China—Report of the Panel* (13 December 2010) WT/DS399/R (Panel, *US—Tyres (China)*) [7.377]; WTO, *United States: Measures Affecting Imports of Certain Passenger Vehicle and Light Truck Tyres from China—Report of the Appellate Body* (5 September 2011) WT/DS399/AB/R (AB, *US—Tyres (China)*) [315] and [317]–[18].
[127] Panel, *EC—Tube or Pipe Fittings* (n 111) [7.369] (emphasis original). See also, Panel, *EC—Tube or Pipe Fittings* (n 111) [7.388].
[128] AB, *US—Hot Rolled Steel* (n 107) [228].

[2.3] Countervailing Duties

In strikingly similar language to Article 3.5 of the Antidumping Agreement, Article 15.5 of the SCM Agreement also requires that a causal link be drawn between the subsidy/subsidies and the injury to the domestic industry. Like Article 4.2 of the Safeguards Agreement and Article 3.5 of the Antidumping Agreement, Article 15.5 of the SCM Agreement also mandates that a non-attribution and causation analysis be performed. Article 15.5 provides as follows:

> It must be demonstrated that the subsidized imports are, through the effects[47] of subsidies, causing injury within the meaning of this Agreement. The demonstration of a causal relationship between the subsidized imports and the injury to the domestic industry shall be based on an examination of all relevant evidence before the authorities. The authorities shall also examine any known factors other than the subsidized imports which at the same time are injuring the domestic industry, and the injuries caused by these other factors must not be attributed to the subsidized imports. Factors which may be relevant in this respect include, inter alia, the volumes and prices of non-subsidized imports of the product in question, contraction in demand or changes in the patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry.
>
> [47] As set forth in paragraphs 2 and 4.

Given that Articles 15.2 and 15.4 are incorporated by cross-reference into Article 15.5, and that the two subparagraphs will also be discussed below, these two subparagraphs are also set out here:

> 15.2 With regard to the volume of the subsidized imports, the investigating authorities shall consider whether there has been a significant increase in subsidized imports, either in absolute terms or relative to production or consumption in the importing Member. With regard to the effect of the subsidized imports on prices, the investigating authorities shall consider whether there has been a significant price undercutting by the subsidized imports as compared with the price of a like product of the importing Member, or whether the effect of such imports is otherwise to depress prices to a significant degree or to prevent price increases, which otherwise would have occurred, to a significant degree. No one or several of these factors can necessarily give decisive guidance.
>
> 15.4 The examination of the impact of the subsidized imports on the domestic industry shall include an evaluation of all relevant economic factors and indices having a bearing on the state of the industry, including actual and potential decline in output, sales, market share, profits, productivity, return on investments, or utilization of capacity; factors affecting domestic prices; actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital or investments and, in the case of agriculture, whether there has been an increased burden on government support programmes. This list is not exhaustive, nor can one or several of these factors necessarily give decisive guidance.

Benitah argues that there are two potential interpretations of the way in which the causal link in Article 15.5 should be drawn. The first interpretation is premised on the idea that, by examining the factors mentioned in Articles 15.2 and 15.4, a fact-finder will simultaneously establish *both* the existence of an injury to the industry *and* the fact that the injury is caused by the subsidised imports 'through the effects of subsidies'.[129]

[129] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 285; Benitah, 'From Economic Complexity' (n 85) 89.

To put it another way, according to this reading of Article 15.5, Articles 15.2 and 15.4 establish the process of determining *both* the existence of an injury *as well as* a causal relationship between subsidised imports and that injury. Benitah claims that, under this approach, the first sentence of Article 15.5 is rendered otiose, since 'the determination of the existence of an injury as set forth in Article[s] 15.2 and 15.4 of the SCM Agreement, is at the same time a demonstration of the causal relationship between the subsidized imports and the injury, through the effects of the subsidies.'[130]

A second consequence of the first interpretation is that it renders the non-attribution requirement of Article 15.5 of the SCM Agreement incoherent, as Benitah acknowledges.[131] That is, the non-attribution element of Article 15.5 is based on the idea that the notion that the injury may have been caused by potentially confounding factors—that is, factors other than the subsidised imports. It is illogical, then, to see Articles 15.2 and 15.4 as containing the process of establishing the existence of injury, since this interpretation would imply that the injury could only have been caused 'through the effects of subsidies'. Therefore, this first interpretation would not only render the first sentence of Article 15.5 otiose, but it would also make the process of non-attribution contained in Article 15.5 redundant as well. In short, the first interpretative approach would be at odds with both the non-attribution and causation limbs of Article 15.5.

Another difficulty with this approach that was not raised by Benitah, but is nonetheless significant, is the fact that the last sentence of both Articles 15.2 and 15.4 expressly provide that the factors listed therein are not exhaustive. Specifically, Article 15.2 provides that '[n]o one or several of these factors can necessarily give decisive guidance' and similarly, Article 15.4 provides that '[t]his list is not exhaustive, nor can one or several of these factors necessarily give decisive guidance'. It follows from this that the factors set out in Articles 15.2 and 15.4 were never intended to be a prescriptive method for determining the existence of an injury. Instead, the last sentence of both Articles 15.2 and 15.4 would seem to suggest that the factors set out therein are only illustrative of the kinds of inquiries that a fact-finder needs to make when determining the existence of an injury. This being the case, whether a fact-finder considers any or all of the factors listed in Articles 15.2 and 15.4 would seem to depend on the case at hand. This fluidity would seem to go against the idea that assessing the factors enumerated in Articles 15.2 and 15.4 is the process by which injury is determined. Therefore, when the importance of the last sentence of Articles 15.2 and 15.4 are borne in mind, it is contended that the first interpretative approach is difficult to sustain.

The second interpretive approach, Benitah claims, is that the factors set out at Article 15.2 and 15.4 'must allow one to apprehend the effects of the subsidy, and this is natural as the effects of the subsidy are *transmitted* through these factors.'[132] In other words, the factors listed in Articles 15.2 and 15.4 are *indicative* of the injury caused by the effects of the subsidies, but an analysis of these factors will not *in and of itself*

[130] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 284; Benitah, 'From Economic Complexity' (n 85) 89.
[131] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 288.
[132] Benitah, 'From Economic Complexity' (n 85) 91 (emphasis original).

allow a fact-finder to conclude that an injury has taken place. Instead, under this approach, a fact-finder has a legal obligation to use a methodology that takes account of the factors set out in Articles 15.2 and 15.4.[133] This interpretation has the advantage of not rendering the first sentence of Article 15.5 redundant. Benitah claims the most serious drawback of this approach is that '*the literal meaning of footnote 47 is stretched to its limits*' in the sense that it must be assumed that the factors listed in those articles were chosen for their ability to capture the effect of the subsidy.[134] Again, however, the fact that the last sentences of Articles 15.2 and 15.4 explicitly provide that the factors listed are not exhaustive surely mitigates against Benitah's concern.

Another significant factor that weighs heavily in favour of the second interpretative approach that was not raised by Benitah is the parallel between the drafting of Article 3.5 of the Antidumping Agreement and Article 15.5 of the SCM Agreement. The WTO strives for consistency of interpretation between the Antidumping Agreement and Part V of the SCM Agreement. The *Declaration on Dispute Settlement Pursuant to the Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994 or Part V of the Agreement on Subsidies and Countervailing Measures* recognises 'the need for the consistent resolution of disputes arising from antidumping and countervailing duty measures'.[135] This need for consistency in interpretation between the two agreements was also recognised by the Panel in *US—DRAMS*.[136] Indeed, Nedumpara concludes with respect to the antidumping and countervailing duties jurisprudence that 'despite their almost separate and wholly unconnected evolution and existence, the injury and causality requirements of antidumping and countervailing duties investigations have nearly merged and look almost indistinguishable now.'[137] The Panels in both *Thailand—H-Beams* and *Egypt—Steel Rebar* confirmed that the list of factors in Articles 3.2 and 3.4 of the Antidumping Agreement are 'illustrative' of injury only, and are not a mandatory list of considerations in the process of determining injury.[138] It is highly likely that this interpretation would also be given to Articles 15.2 and 15.4 of the SCM Agreement, particularly given the last sentence of those articles. In light of these considerations, it is argued that the second interpretative approach of Article 15.5 of the SCM Agreement put forward by Benitah is the better view.

The Panel in *EC—Countervailing Measures on DRAM Chips* also noted the parallel between the drafting of Article 15.5 of the SCM Agreement and Article 3.5 of the Antidumping Agreement,[139] despite the fact that

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[133] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 285–86; Benitah, 'From Economic Complexity' (n 85) 91.
[134] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 286 (emphasis original).
[135] The *Declaration on Dispute Settlement Pursuant to the Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994 or Part V of the Agreement on Subsidies and Countervailing Measures*, <https://www.wto.org/english/docs_e/legal_e/41-dadp3_e.htm> accessed 23 October 2017.
[136] WTO, *United States: Countervailing Duty Investigation on Dynamic Random Access Memory Semiconductors (DRAMS) from Korea—Report of the Panel* (21 February 2005) WT/DS296 (Panel, *US—Countervailing Duty Investigation on DRAMs)* [7.351].
[137] Nedumpara (n 14) 54.
[138] WTO, *Thailand: Antidumping Duties on Angles, Shapes and Sections of Iron or Non-Alloy Steel and H-Beams from Poland—Report of the Panel* (28 September 2000) WT/DS122/R (Panel, *Thailand—H-Beams*) [7.274] and WTO, *Egypt: Definitive Antidumping Measures on Steel Rebar from Turkey—Report of the Panel* (8 August 2002) WT/DS211/R [7.115].
[139] WTO, *European Communities: Countervailing Measures on Dynamic Random Access Memory Chips from Korea—Report of the Panel* (17 June 2005) WT/DS299/R (Panel, *EC—Countervailing Measures on DRAM Chips*) [7.404].

Article 15.5 of the SCM Agreement is concerned with countervailing duties and Article 3.5 concerns antidumping measures. Indeed, as Miranda observes, except for the different characterisation of the imports at issue, the only difference between the two articles is that the language in the footnote to Article 15.5 of the SCM Agreement is incorporated into the body of the text of Article 3.5 of the Antidumping Agreement.[140] The Panel therefore held that, due to this similarity, Panels are required to separate and distinguish the injury caused by factors other than subsidised imports (again, such factors will be referred to in this chapter as potentially confounding factors).[141] Certainly, in *EC—Countervailing Measures on DRAM Chips*, the Panel held that it was not satisfied that the EC's investigating authority had adequately separated and distinguished the injurious effects of overcapacity from the injurious effects of the subsidized imports, 'let alone [provided] a satisfactory explanation of the nature and extent of the injurious effects of the factor "overcapacity", as distinguished from the injurious effects of the subsidized imports.'[142] Nonetheless, the Panel resisted stipulating a specific methodology by which future investigating authorities might perform these requirements.[143]

Unlike the safeguards and antidumping contexts, the jurisprudence in the context of Article 15.5 of the SCM Agreement has not yet addressed whether a subsidy must be the sole cause of the injury, or whether the causal link might be composed of some combination of subsidy/subsidies and potentially confounding factors. In other words, the jurisprudence is yet to clarify whether what this chapter has called the 'sufficiency of imports' approach or the 'multi-factorial approach' applies in this context. Despite the lack of explicit guidance on this point, it is suggested that it is highly likely that future Panels that were required to make a determination on this point would follow the 'multi-factorial approach' favoured in the antidumping context. This contention is made because of the similarity in drafting between Article 3.5 of the Antidumping Agreement and Article 15.5 of the SCM Agreement, as well as the desire for a consistent interpretation between the two agreements.

Moreover, the Panel's reasoning in *EC—Countervailing Measures on DRAM Chips* concerning Article 15.5 SCM Agreement would appear to support a rigorous non-attribution analysis, which is more compatible with the multi-factorial approach. That is, the Panel in that case said that:

> In our view, it does not suffice for an investigating authority merely to 'check the box'. An investigating authority must do more than simply list other known factors, and then dismiss their role with bare qualitative assertions, such as 'the factor did not contribute in any significant way to the injury', or 'the factor did not break the causal link between subsidized imports and material injury.' In our view, an investigating authority must make a better effort to quantify the impact of other known factors, relative to subsidized imports, preferably using elementary economic constructs or models. At the very least, the non-attribution language of Article 15.5 requires from

[140] Miranda (n 85) 729.
[141] Panel, *EC—Countervailing Measures on DRAM Chips* (n 132) [7.404].
[142] ibid [7.421].
[143] ibid [7.405].

> an investigating authority a satisfactory explanation of the nature *and extent* of the injurious effects of the other factors, as distinguished from the injurious effects of the subsidized imports.[144]

Certainly, in *EC—Countervailing Measures on DRAM Chips*, the Panel held that it was not satisfied that the EC's investigating authority had adequately separated and distinguished the injurious effects of overcapacity from the injurious effects of the subsidized imports, 'let alone [provided] a satisfactory explanation of the nature and extent of the injurious effects of the factor's "overcapacity", as distinguished from the injurious effects of the subsidized imports.'[145] In short, all three of the trade remedies would seem to require the use of the multi-factorial approach.

[2.4] Recapitulation of the Treatment of Non-Attribution and Causation in relation to Safeguards, Antidumping Measures and Countervailing Duties

Having surveyed the jurisprudence concerned with non-attribution and causation in the provisions, it is useful to distil the main features of the AB's current position on non-attribution and causation to which any useful causation tests must be sensitive. First, all of the provisions require both a non-attribution as well as a causation analysis in order to determine whether it is the import causing injury to an industry and not some potentially confounding factor. The non-attribution analysis involves separating and distinguishing the injurious effects of imports from potentially confounding factors.

Second, Article 4.2 of the Safeguards Agreement and Article 3.5 of the Antidumping Agreement have both been interpreted using what this chapter has called the 'multi-factorial approach'. That is, the provisions are to be interpreted in such a way that the injurious effects of the imports and the potentially confounding factors are combined for the purpose of determining whether the respective thresholds of injury have been reached. Indeed, in the antidumping context, the AB said that the non-attribution analysis does not require simply an investigation into whether the potentially confounding factors produced harm, but also requires an explanation of the *nature and extent* of that harm. The jurisprudence in relation to countervailing measures has not yet considered the question of whether the 'multi-factorial approach' or the 'sufficiency of imports approach' applies. Nonetheless, given the desire for a consistent resolution of disputes concerning antidumping measures and countervailing duties, it is likely that the 'multi-factorial' approach will also be used to interpret Article 15.5 of the SCM Agreement.

[2.5] Simultaneous Treatment of Safeguards, Antidumping Measures and Countervailing Duties

So far this chapter has analysed the jurisprudence relating to the provisions and has found a number of parallels in the way in which they have been interpreted by the AB. These similarities between the way in

[144] WTO, *European Communities: Countervailing Measures on Dynamic Random Access Memory Chips from Korea—Report of the Panel* (17 June 2005) WT/DS299/R [7.405] (emphasis original).
[145] ibid [7.421].

which the provisions are drafted have also been noted in the literature.[146] In particular, the interpretation of the provisions concerns the question of whether what this chapter has called 'the multi-factorial approach' should be used. Second, the AB has found that the provisions all require a non-attribution analysis, where the contribution of imports to injury is separated from potentially confounding factors. Indeed, the *US—Hot Rolled Steel* Panel and the *US—Tyres (China)* Panel together with the AB have been willing to draw analogies between the provisions on account of their similarities in drafting.

It is for these reasons that this chapter will consider the non-attribution and causation requirements of the three agreements together. In so doing, it is recognised that the Safeguards Agreement, the Antidumping Agreement and Part V of the SCM Agreement reflect very different economic rationales. Nonetheless, these differences do not affect the non-attribution and causation analyses that are specific to the provisions in question, except with respect to the *de minimis* threshold in the Qualification Analysis that will be discussed at Section [4.3] below. That is, the proposed *de minimis* threshold for the safeguards analysis is much higher than for the antidumping and countervailing duties analysis. This difference reflects the fact that safeguard measures are more trade-restrictive than antidumping measures and countervailing duties[147] and should therefore be subject to a more rigorous causal standard. This chapter now turns to consider one approach to the non-attribution and causation analyses that has been used by domestic competent authorities that relies on assessing the non-quantitative features of potentially confounding factors—namely, the 'breaking the causal link' approach.

[3.0] The 'Breaking the Causal Link' Approach

One approach that domestic competent authorities have used in order to perform the causation and non-attribution analyses is the 'breaking the causal link approach'. This approach has been used to interrogate causation in respect of all of the trade remedies by the EU Commission[148] and, to a lesser extent, the United

[146] See Miranda (n 85); Ahn and Moon (n 16) 1023; Sykes, 'The Causation Requirement' (n 13) 158; Jasper M Wauters, 'The Safeguards Agreement—An Overview,' in Kyle W Bagwell, George A Bermann and Petros C Mavroidis, *Law and Economics of Contingent Protection in International Trade* (CUP 2010) 334; and Nedumpara (n 14).

[147] Mavroidis, Messerlin and Wauters, *The Law and Economics of Contingent Protection in the WTO* (n 84) 465–66; Robert E Baldwin and Jeffrey W Steagall, 'An Analysis of ITC Decisions in Antidumping, Countervailing Duty and Safeguard Cases' (1994) 130(2) Rev World Econ 290, 304.

[148] See, eg, in the safeguards context: Commission Regulation (EC) 1694/2002 of 27 September 2002 imposing definitive safeguard measures against imports of certain steel products [2002] OJ L261/1 (74)–(100); Commission Regulation (EC) 1447/2004 of 13 August 2004 imposing provisional safeguard measures against imports of farmed salmon [2004] OJ L267/3 (66)–(90); Commission Regulation (EC) 206/2005 of 4 February 2005 imposing definitive safeguard measures against imports of farmed salmon [2005] OJ L33/8 (74)–(98); Commission Regulation (EC) 658/2004 of 7 April 2004 imposing definitive safeguard measures against imports of certain prepared or preserved citrus fruits (namely mandarins, etc) [2004] OJ L104/67 (64)–(95). In the antidumping context, see: Commission Decision (EC) 55/96/ECSC of 15 January 1996 imposing a definitive anti-dumping duty on imports into the Community of hermatite pig-iron originating in the Czech Republic and accepting an undertaking from a specified exporter of the same product [1996] OJ L12/5 (38)–(48); Commission Decision (EC) 753/2006 of 3 November 2006 terminating the anti-dumping proceeding concerning imports of recordable compact discs (CD+/-R) originating in the People's Republic of China, Hong Kong and Malaysia [2006] OJ L305/15 (74)–(100); Commission Decision (EC) 1238/2000/ECSC of 14 June 2000 imposing a provisional anti-dumping duty on imports of coke of coal in pieces with a diameter of more than 80 mm originating in the People's Republic of China [2000] OJ L141/9 (99)–(127);

States International Trade Commission (USITC).[149] The EU Commission recently used the 'breaking the causal link' approach in *Commission Regulation (EU) No 473/2010,*[150] which concerned whether subsidised imports of certain polyethylene terephthalate originating in Iran, Pakistan and the United Arab Emirates had caused injury to the Union's industry. In adjudicating the matter, the EU Commission made a determination about the existence of a causal link between the subject imports and the injury to the domestic industry before it had examined the potentially confounding factors.[151] The EU Commission essentially made this determination of causation based on evidence of price undercutting by subject imports and the coincidence in time between the volume of subsidised imports and damage to the EU's industry.[152]

Only after making this determination of causation did the Commission then look at potentially confounding factors to determine if any were capable of breaking the causal link that it had already determined.[153] In the case before it, potentially confounding factors included the export performance of the Union industry, competition from the other Union producers, the economic downturn and the geographical location and lack of vertical integration. The EU Commission found that these potentially confounding factors had not broken the causal link between the subsidised imports and the injury to the Union industry.[154] The EU Commission made its determination based on the lack of coincidence in time between the onset of

Commission Decision (EC) 307/2000/ECSC of 10 February 2000 imposing a provisional anti-dumping duty on imports of certain hot-rolled flat products of non-alloy steel originating in the People's Republic of China, India and Romania [2000] OJ L36/4 (69)–(102); Commission Decision (EC) 283/2000/ECSC of 4 February 2000 imposing a definitive anti-dumping duty on imports of certain flat rolled products of iron or non-alloy steel, of a width of 600 mm or more, not clad, plated or coated, in coils, not further worked than hot-rolled, originating in Bulgaria, India, South Africa, Taiwan and the Federal Republic of Yugoslavia and accepting undertakings offered by certain exporting producers and terminating the proceeding concerning imports originating in Iran [2000] OJ L31/15 (178)–(220); and Commission Regulation (EEC) 313/1992 of 4 February 1992 imposing a provisional anti-dumping duty on imports of radio-broadcast receivers of a kind used in motor vehicles, originating in South Korea [1992] OJ L34/8 (45)–(54). In the countervailing duties context, see: Commission Decision (EEC) 90/266/EEC of 13 June 1990 accepting an undertaking given by the Royal Thai Government in connection with the countervailing duty proceeding concerning imports of ball bearings with a greatest external diameter not exceeding 30 mm, originating in Thailand [1990] OJ L152/59 (60)–(69); Commission Regulation (EEC) 1432/91 of 27 May 1991 imposing a provisional countervailing duty on imports of polyester fibres and polyester yarns originating in Turkey [1991] OJ L137/8 (54)–(58); and Commission Decision (EC) 284/2000/ECSC of 4 February 2000 imposing a definitive countervailing duty on imports of certain flat rolled products of iron or non-alloy steel, of a width of 600 mm or more, not clad, plated or coated, in coils, not further worked than hot-rolled, originating in India and Taiwan and accepting undertakings offered by certain exporting producers and terminating the proceeding concerning imports originating in South Africa [2000] OJ L31/44 (268)–(311).

[149] See, eg, USITC, *Certain Circular Welded Pipe and Tube from Brazil, India, Korea, Mexico, Taiwan, Thailand and Turkey* (701-TA-253 and 731-TA-132, 252, 271, 273, 532-534 and 536) (Fourth Review) January 2018, 35; USITC, *Lined Paper School Supplies from China and India* (701-TA-442 and 731-TA-1095-1096) (Second review) February 2018, 26.

[150] Commission Regulation (EU) 473/2010 of 31 May 2010 imposing a provisional countervailing duty on imports of certain polyethylene terephthalate originating in Iran, Pakistan and the United Arab Emirates [2010] OJ L134/25. The reasoning of this case was confirmed in Council Implementing Regulation (EU) 857/2010 of 27 September 2010 imposing a definitive countervailing duty and collecting definitively the provisional duty imposed on imports of certain polyethylene terephthalate originating in Iran, Pakistan and the United Arab Emirates [2010] OJ L254/10.

[151] Commission Regulation (EU) 473/2010 of 31 May 2010 (n 143) (245).

[152] ibid (242).

[153] ibid (246)–(261).

[154] ibid (263); Council Implementing Regulation (EU) 857/2010 of 27 September 2010 (n 143) (126).

potentially confounding factors and the onset of the injury to the EU industry as well as the inherent non-quantitative features of the potentially confounding factors.

Pakistan appealed this case to the WTO,[155] arguing that: (1) the Commission's 'break the causal link' approach was contrary to the 'three-step analysis' laid down by the AB in *US—Wheat Gluten*;[156] (2) the Commission's approach prejudged its analysis of potentially confounding factors; and (3) the Commission's basis for making a determination of a causal link between subject imports and observed injury to the domestic injury was flawed because it relied on findings of price undercutting by subject imports and temporal coincidence between an increase in volume of imports and injury to the domestic industry.[157]

Taking each of Pakistan's arguments in turn, the Panel found that there was nothing in either the SCM Agreement or the jurisprudence to indicate that the three-step methodology described in *US—Wheat Gluten* is mandatory. Moreover, the Panel cited *US—Lamb*, in which the AB clarified that the three steps identified in *US—Wheat Gluten* 'simply describe a logical process for complying with the obligations relating to causation', and 'are not legal "tests" mandated by the text of the Agreement on Safeguards'.[158] Second, the Panel found against the idea that the Commission had prejudged its analysis of potentially confounding factors. Specifically, the Panel said that the Commission's reasoning indicates that the Commission 'considered' that a causal link existed between the subject imports and the observed injury to the domestic industry. After that provisional finding, the Commission then examined whether potentially confounding factors broke that causal link. The Panel found that it was only after the analysis of potentially confounding factors that the Commission concluded more definitively that the causal link between the subsidised imports and domestic injury existed.[159] The Panel found that the Commission's methodology allowed for the possibility that the analysis of potentially confounding factors would negate its provisional finding of causation.[160]

Third, the Panel found that the Commission's basis for making a determination of a causal link between subject imports and observed injury to the domestic injury was sound. In particular, it found that the Commission had considered:

> (a) the condition of the domestic industry; (b) price undercutting by subject imports; (c) the fact that "PET is a commodity and competition takes place mainly via price", due to which it attached special significance to price undercutting by subject imports; (d) the observation that subject imports "exerted a downward pressure on prices, preventing the Union industry from keeping its

[155] WTO, *European Union—Countervailing Duties on Certain Polyethylene Terephthalate from Pakistan—Report of the Panel* (6 July 2017) WT/DS486/R (Panel, *EU—PET (Pakistan)*).
[156] AB, *US—Wheat Gluten* (n 12) [69].
[157] Panel, *EU—PET (Pakistan)* (n 148) [7.108].
[158] AB, *US—Lamb* (n 98) [178].
[159] Panel, *EU—PET (Pakistan)* (n 148) [7.118].
[160] ibid.

> sales prices to a level that would have been necessary to cover its costs and to realise a profit"; (e) the increase in volume of subject imports; and (f) an increase in market shares of subject imports.[161]

For this reason, the Panel found that the Commission's basis for finding a causal link was sufficient and consistent with the requirements of Article 15.5 of the SCM Agreement. The EU notified the DSB of its decision to appeal the case to the AB on 30 August 2017. On 4 September 2017, Pakistan notified the DSB of its decision to cross-appeal.

Despite the Panel's endorsement of the 'breaking the causal link' approach, it is argued that the approach is flawed for two reasons. First, the fact that the causal link is provisionally drawn using subsidised imports alone means that the approach uses the 'sufficiency of imports' approach, rather than the 'multi-factorial approach'. That is, the provisional causal link does not allow for the possibility of potentially confounding factors to have contributed to the injury in any way. Although potentially confounding factors are considered after the causal link is drawn, this non-attribution analysis is largely tokenistic, as is necessarily the case when the 'sufficiency of imports' approach is used. In this sense, the 'breaking the causal link' approach would appear to be contrary to the guidance of the AB and would also appear to be at odds with the provisions, in the sense that the provisions do not provide that imports must be the sole factor in determining injury.

Second and relatedly, the idea of performing a non-attribution analysis *after* a causation analysis does not allow for the *interaction* between the injurious effects of the subsidised imports and potentially confounding factors. This interaction is important because frequently it is a *combination* of imports and potentially confounding factors that has caused harm to the industry. Indeed, the idea that harm to an industry may have been occasioned by some kind of interaction between factors instead of imports alone is at the core of the rationale for favouring the 'multi-factorial approach' to the 'sufficiency of imports approach'. Moreover, it is potentially unrealistic to separate out the injury caused by subsidised imports from the injury caused by potentially confounding factors to the extent that the 'breaking the causal link' approach necessarily requires.

Given these fundamental conceptual problems with performing a non-attribution analysis after a causation analysis, it is argued that the three-step process set out at paragraph [69] of *US—Wheat Gluten* by the AB is the superior approach for satisfying the causation requirements of Article 15.5 of the SCM Agreement as well as Articles 2.1 and 4.2 of the Safeguards Agreement and Articles 3.1 and 3.5 of the Anti-Dumping Agreement. Whilst the AB's decision in *US—Wheat Gluten* relates to the safeguards context, it can easily be adapted to these other contexts. Following this three-step approach solves the problems discussed above in relation to performing the non-attribution analysis last. Moreover, the necessity to inquire into the quantitative effects of both imports and potentially confounding factors means that it is easier to interrogate the *interaction* between imports and potentially confounding factors. It is only once the interaction has been

[161] ibid [7.125].

analysed that a fact-finder is in a true position to assess the strength of the causal link between imports and injury to the industry. This chapter now turns to consider how this three-step process enumerated by the AB in *US—Wheat Gluten* might operate in practice.

[4.0] Non-Attribution: The First Two Steps of the Tripartite Process

[4.1] Introduction

It has been seen that domestic competent authorities have their own internal processes in place for assessing whether the criteria for introducing trade remedies have been met. These processes are governed by domestic legislation or regulations. Moreover, courts that are responsible for reviewing domestic competent authorities' decisions frequently allow such authorities to enjoy a wide margin of discretion.[162] For example, in the US antidumping context, the United States Code on Judiciary and Judicial Procedure explicitly provides that the determinations of the USITC are 'presumed to be correct'.[163] The result is that the introduction of safeguards, antidumping measures and countervailing duties is subject to a patchwork of domestic regimes that are largely beyond the reach of review, except at the level of the WTO itself.

As was foreshadowed at the beginning of this thesis, insofar as the Safeguards Agreement is concerned, the AB in *US—Wheat Gluten* has provided some useful guidance to domestic competent authorities as follows: (1) authorities must separate the injurious effects of increased imports from the injurious effects produced by potentially confounding factors; (2) authorities must then attribute to imports the harm they alone have produced before attributing to potentially confounding factors the harm that they have occasioned in turn; and (3) finally, authorities should determine whether there is a causal link between imports and 'serious injury or threat thereof'; and, if so, whether such a causal link involves a 'genuine and substantial relationship of cause and effect' between these two elements.[164] The first two steps relate to the non-attribution limb, while the third step pertains to the causation analysis.[165] These three steps make up the Tripartite Non-Attribution/Causation Analysis that was foregrounded in the introduction to this thesis.

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[162] For the scope of judicial review in the US Antidumping context, see: 19 US Code § 1516a(b)(1)(A); (B)(ii); 19 US Code § 1516a(b)(1)(B)(i); *Nippon Steel Corp v Int'l Trade Commission*, 345 F.3d 1379, 381 (Fed Cir 2003); *US Steel Group v United States,* 96F.3d 1352, 1357 (Fed Cir 1996); *Texas Crushed Stone Co. v United States*, 35 F.3d 1535, 1540 (Fed Cir 1994). See also Andrea Casson and Neal Reynolds, 'Judicial Review of the International Trade Commission's Injury Determinations in Antidumping and Countervailing Proceedings: An Overview and Analysis of Federal Court Decisions in 2005' (2006) 38 Georgetown J Int L 89, 91. For the scope of judicial review in the US safeguards context, see *Motion Systems Corporation v Bush*, 437 F.3d 1356, 1359 (Fed Cir 2006) and Gregory Bowman, Nick Covelli, David Gantz and Ihn Uhm, *Trade Remedies in North America* (Kluwer 2010) 396–97. For judicial review of trade remedies in the EU context, see: Case T-35/01 *Shanghai Teraoka Electronic v Council* [2004] ECR II-3663, [48]. See also: Case T-162/94 *NMB France and Others v Commission* [1996] ECR II-427, [72]; Case T-97/95 *Sinochem v Council* [1998] ECR II-85, [51]; Case T-340/99 *Arne Mathiesen v Council* [2002] ECR II-2905, [53]. For a general overview of the standard of review in international courts and tribunals, see Lukasz Gruszczynski and Wouter Werner (ed), *Deference in International Courts and Tribunals* (OUP 2014).

[163] 28 USC § 2639(a)(1).

[164] AB, *US—Wheat Gluten* (n 12) [69].

[165] ibid.

The nomenclature of these two limbs is potentially misleading in the sense that they might suggest that only the third step—the causation limb—requires a causal analysis. In reality, however, the second step of the non-attribution limb requires causation analyses that are more complex and rigorous than the causation analysis required in the third step. While a Panel or the AB has never explicitly endorsed this Tripartite Non-Attribution/Causation Analysis in the antidumping context, the Panel's review of the EC's report in *EC—Tube or Pipe Fittings* at least makes these three same inquiries of the EC domestic competent authority's report.[166] Similarly, a Panel or the AB has never referred to the Tripartite Non-Attribution/Causation Analysis for the purpose of making a determination about causation in the context of countervailing duties. Nonetheless, given: (1) the fact that all of the trade remedies require a non-attribution and causation analysis to be undertaken; and (2) the explicit intention to resolve disputes involving antidumping and countervailing duties in a consistent fashion,[167] it makes sense to use the Tripartite Non-Attribution/Causation Analysis to make a determination about countervailing duties also.

[4.2] The First Step of the Non-Attribution Process

Regardless of whether it is investigating safeguards, antidumping measures or countervailing duties, a domestic competent authority would begin the non-attribution process by separating the injuries to the Member's domestic industry according to the type of injury inflicted, as per the guidance of the AB in *US—Wheat Gluten* outlined above. For instance, the domestic competent authority would need to separate all of the injuries inflicted on the domestic industry into smaller, specific injuries. This chapter will call these smaller, specific injuries 'sub-injuries' as a means of distinguishing them from the ultimate injury to the domestic industry. These smaller sub-injuries might include, for instance: (1) injury to the ability to raise debt; (2) injury to productivity; (3) injury to consumer demand; and (4) injury to corporate profits etc.[168] These sub-injuries are examples only—there may well be different sub-injuries in each case; and there may well also be more or less than four in number. This separation of sub-injuries may be seen diagrammatically in Step 1 of Figure 13 set out at page 56 below. It is important to clarify that, whilst this diagram depicts each of these sub-injuries to be of equal size spatially, in reality, each sub-injury might well be of greater or lesser significance. Concomitantly, each sub-injury might well have greater or lesser impact on the ultimate finding of 'serious injury or threat thereof'.

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[166] Panel, *EC—Tube or Pipe Fittings* (n 111) [7.357]–[7.368].

[167] *Ministerial Declaration on Dispute Settlement Pursuant to the Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994 or Part V of the Agreement on Subsidies and Countervailing Measures;* and Panel, *US—Countervailing Duty Investigation on DRAMs* (n 129) [7.351].

[168] Further examples of sub-injuries in the safeguards context may be seen, eg, in 19 US Code § 2252(c)(1); and Council Regulation (EC) No 260/2009 (26 February 2009), art 10(1)(c). In the antidumping context, see Council Regulation (EC) No 1225/2009 (30 November 2009), art 3(5). In the context of countervailing measures, see Article 15.4 of the SCM Agreement and art 8(4) of Council Regulation (EC) No 597/2009 (11 June 2009).

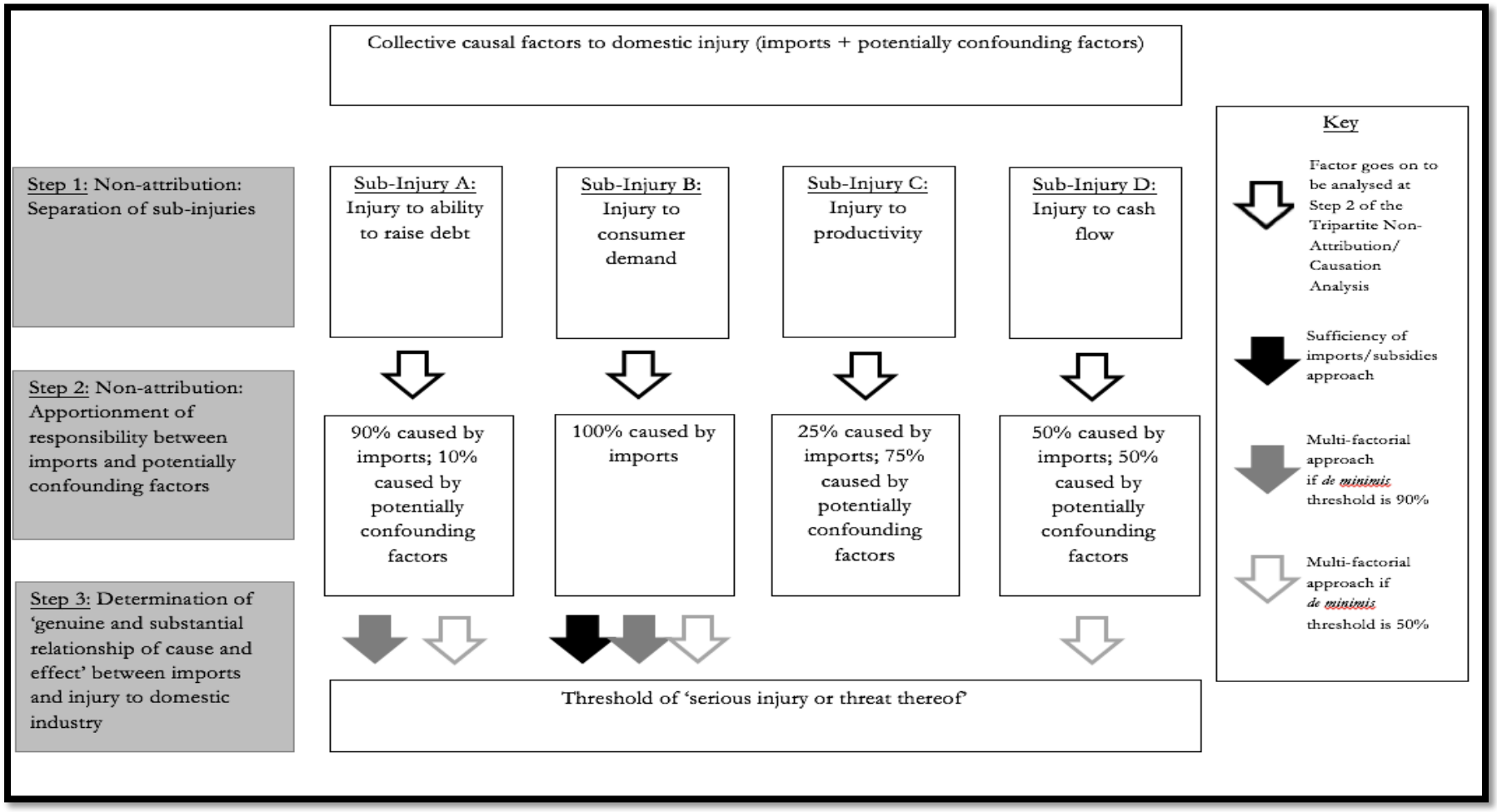

Figure 13: Overview of Steps 1, 2 and 3 of the Tripartite Non-Attribution/Causation Analysis: Non-attribution and causation analysis under Articles 4.2 of the Safeguards Agreement, 3.5 of the Antidumping Agreement and 15.5 of the SCM Agreement

[4.3] The Second Step of the Tripartite Non-Attribution/Causation Analysis

Introduction

The second step of the non-attribution process is by far the most difficult of the three steps for three reasons: (1) it involves three causation analyses; (2) it requires the respective percentage contributions to a sub-injury to be apportioned between imports on the one hand and potentially confounding factors on the other; and (3) it is argued that a *de minimis* threshold for satisfying causation under the second causation test is required, but the level of this *de minimis* threshold is unclear.

The second step in the Tripartite Non-Attribution/Causation Analysis involves analysing whether a sub-injury that is necessary to the ultimate finding of injury was caused by imports and/or potentially confounding factors, or some combination thereof. This will be called the 'Apportionment Analysis'. The Apportionment Analysis has two stages. The first involves identifying the potentially confounding factors that may have contributed to the injury using a causation analysis. This will be called the 'identification of potentially confounding factors stage'. The second involves disentangling the injury caused by imports from the injury caused by potentially confounding factors. This is the second causation analysis and will be called the 'Disentanglement stage'.

Turning first to the identification analysis, in the safeguards context, the domestic competent authority must satisfy itself that all the potentially confounding factors have been identified. That is, the domestic competent authority cannot rely on the findings of the interested parties; but instead, where the domestic competent authority believes that potentially confounding factors must be identified, it must investigate.[169] In contrast, in the antidumping and countervailing duty context, it seems that the domestic competent authority does not have the same requirement actively to investigate potentially confounding factors on its own initiative, except where it is aware of a factor that is not apparent to the parties. That is, the Panel in *Thailand—H-Beams* held that:

> We consider that other 'known' factors would include those causal factors that are clearly raised before the investigating authorities by interested parties in the course of an AD investigation. We are of the view that there is no express requirement in Article 3.5 AD that investigating authorities seek out and examine in each case *on their own initiative* the effects of *all* possible factors other than imports that may be causing injury to the domestic industry under investigation. Of course, they would certainly not be precluded from doing so if they chose to. We note that there may be cases where, at the time of the investigation, a certain factor may be 'known' to the investigating authorities without being known to the interested parties. In such a case, an issue might arise as to whether the authorities would be compelled to examine such a known factor that is affecting the state of the domestic industry.[170]

This conclusion was not reviewed by the AB. In a related vein, the Panel in *EC—Salmon* found that if a domestic competent authority has prior knowledge of certain causal factors, such knowledge may 'play a

[169] AB, *US—Wheat Gluten* (n 12) [52]–[56].
[170] Panel, *Thailand—H-Beams* (n 131) [7.273] (emphasis original; footnotes omitted).

part' in the non-attribution analysis.[171] Whilst there have not been any statements about the requirement to investigate potentially confounding factors with regard to the imposition of countervailing duties, it is likely that any future Panel would follow the position in respect of the Antidumping Agreement.

Once the Apportionment Analysis is complete, the next question is whether a specific sub-injury is sufficiently attributable to imports alone that it can pass the non-attribution limb and qualify for final analysis under the third step. This third causation test will be called the 'Qualification Analysis'. Each of these three causation analyses will now be examined in turn. A diagrammatic overview of the Tripartite Non-Attribution/Causation Analysis as it is applied to safeguards, antidumping measures and countervailing duties is set out at Figure 13 at page 56. It is contended that the methods proposed in the Tripartite Non-Attribution/Causation Analysis are identical for both safeguards, antidumping measures and countervailing duties. As mentioned, the crucial difference between each of the measures is the *de minimis* causation threshold applied at the stage of the Qualification Analysis at Step 2, to be discussed below.

1. Apportionment Analysis

As Step 2 in Figure 13 on page 57 illustrates, it is theoretically possible that sub-injuries will fall into three categories of causal responsibility: (1) some sub-injuries may have been caused exclusively by imports; (2) yet others, exclusively by potentially confounding factors; and (3) finally, by some kind of combination of imports and potentially confounding factors. It is suggested that a sub-injury cannot be over-determined[172] by imports on the one hand and potentially confounding factors on the other hand.[173] This is because a sub-injury is not an all-or-nothing affair, such as a fire that does or does not get ignited, as in the example given in Chapter I of this thesis. Instead, a sub-injury is a *continuous* phenomenon, which would only be *intensified* where both imports and potentially confounding factors were each sufficient to cause harm. For example, if it were found that imports were 30% causally responsible for a sub-injury and potentially confounding factors were also 30% causally responsible, it does not make sense to say that the sub-injury was over-determined. Instead, the sub-injury is simply deepened due to receiving causal contributions from both sources.

(a) Identification of Potentially Confounding Factors Stage: Safeguards Only

Most of the scholarly literature on the Apportionment Analysis has focused on the Disentanglement Stage, with little discussion at all being had about the 'Identification of Potentially Confounding Factors Stage'. This is perhaps because the Disentanglement Stage is the more conceptually difficult of the two stages. Nonetheless, it is suggested that the 'Identification of Potentially Confounding Factors Stage' also merits

[171] WTO, *European Communities: Antidumping Duties on Farmed Salmon from Norway—Report of the Panel* (16 November 2007) WT/DS377/R [7.667].
[172] See Chapter I, pages 15–17 for a description of over-determination.
[173] C.f. James J Nedumpara, 'Causation in Trade Remedy Actions: Problems with the "But For" Test' (2015) 10(11) GTCJ 402, 405.

consideration. The identification stage is simply concerned with the question of whether it seems likely that a potentially confounding factor contributed in some way to the sub-injury at all. At the identification stage, it is not necessary to know whether a potentially confounding factor really did contribute to a sub-injury, or to what extent—as this is interrogated more deeply at the 'Disentanglement Stage'. At this stage, it is sufficient simply for the fact-finder to identify those potentially confounding factors that appear to have made a contribution. Both the identification and the disentanglement stages involve causation analyses, since both are fundamentally directed at interrogating whether imports or potentially confounding factors contributed to the sub-injuries. If these potentially confounding factors are found likely to have had some impact on the sub-injury identified above (eg, injury to productivity), they will then be considered in the Disentanglement Stage. Accordingly, it is suggested that a non-quantitative causal test will suffice for the identification stage.

The question becomes, then, which non-quantitative causal test is most appropriate. Before turning to consider how each of the non-quantitative causal tests might be applied in this context, it is helpful to start with a concrete example of what is required when identifying potentially confounding factors. Imagine that Member A has brought proceedings against Member B in the WTO because Member A alleges that Member B has illegally introduced safeguard measures against it. Member B contends that its safeguard measures are legal because its domestic competent authority had determined that there was a 'genuine and substantial relationship of cause and effect'[174] between Member A's cotton imports and 'serious injury or threat thereof' to Member's B's domestic cotton industry. Member A then alleges that Member B's injured cotton industry is not due to imports, but rather, due to Member B's own internal circumstances, such as dissatisfaction amongst cotton factory-workers and a major fire and earthquake. Member B's domestic competent authority must then provide its internal report to the WTO Panel so that the WTO Panel can make an ultimate determination as to whether the introduction of the safeguard measures was legal.

In reviewing the report, the WTO Panel must be satisfied that Member B considered the injurious effects of the potentially confounding factors on the cotton industry. Above all, the WTO Panel must be satisfied that Member B's potentially confounding factors were not sufficient to break the 'genuine and substantial relationship of cause and effect' between imports and 'serious injury or threat thereof' to Member B's cotton industry. The way in which Member B's domestic competent authority might go about conducting these non-attribution and causation analyses is the subject of this section. Although this worked example considers the process of demonstrating the legality of introducing safeguard measures, the process for a domestic competent authority to demonstrate the legality of introducing an antidumping or countervailing measure would be identical, except in relation to the *de minimis* threshold to be discussed below.

Imagine that the following potentially confounding factors were identified as having had a possible impact on Member B's injured cotton industry: (1) a one-day labour strike amongst the cotton factory workers; (2)

[174] AB, *US—Wheat Gluten* (n 12) [67].

an outbreak of *salmonella* in the local water supply; (3) an earthquake that destroyed the majority of the cotton factories which were located in a particular area of the same city; and (4) a growing cotton industry in a nearby country that is actively recruiting former cotton factory-workers from Member B and offering them better conditions. The question is which non-quantitative causal test will best interrogate these potentially confounding factors—or indeed, any such factors at this stage of the analysis.

The *Sine Qua Non* Test

A fact-finder using the *sine qua non* test[175] would ask, '*but for* the existence of this particular potentially confounding factor, would the sub-injury have occurred?' When applied to the four potentially confounding factors identified above, it is unlikely that the *salmonella* outbreak would be found to be necessary to the resulting sub-injury. The labour strike is likely to have played some very small causal role, and is therefore likely to be included in the disentanglement stage, since the *sine qua non* test does not distinguish between factors that are definitely necessary and those that are only marginally so. It is likely that both the earthquake and the increased competition for workers from the foreign cotton industry would be found to be necessary. For a diagrammatic representation of this example, see Figure 14 below.

[175] For a description of the *sine qua non* test, see Chapter I, Section [2.2], pages 12–18.

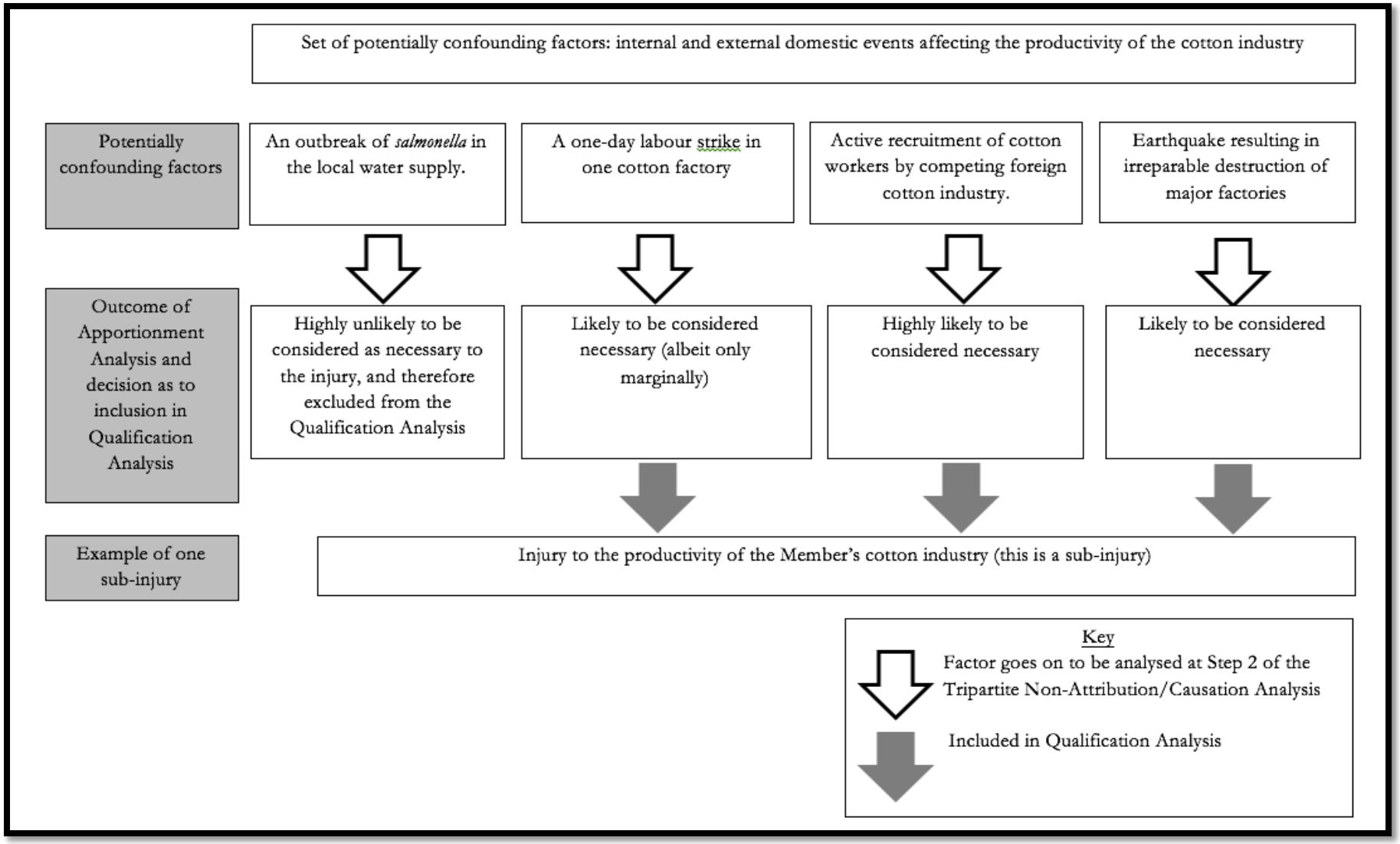

Figure 14: Step 2 of the Tripartite Non-Attribution/Causation Analysis: Example of applied apportionment causation test: Application of the *sine qua non* test

The fact that the *sine qua non* test is over-inclusive—and would therefore include potentially confounding factors that were technically necessary but ultimately insignificant in producing the sub-injury—is not fatal to its use. This is because those factors that were technically necessary but ultimately immaterial would be discarded from consideration in the Qualification Analysis stage of non-attribution, which will be discussed below. The fact that the *sine qua non* test cannot deal with cases of over-determination is also not problematic in this case because, as has been discussed above, a sub-injury cannot be over-determined in the same manner as an all-or-nothing phenomenon. One potential objection to the use of the *sine qua non* test is the intractable 'hypothetical world problem'.[176] That is, in order for a fact-finder to know the extent to which a potentially confounding factor caused the sub-injury, that fact-finder must be able to imagine a hypothetical world in which that potentially confounding factor did not exist. For example, in order to appreciate whether a Member's earthquake causally contributed to the sub-injury, a fact-finder must be able to imagine a hypothetical world in which such an earthquake did not take place and then consider whether it was the earthquake that made the difference to the sub-injury. This 'hypothetical world problem' is not fatal to the use of the *sine qua non* test in this context, but it does mean that the *sine qua non* test must be approached with some caution.

Hart & Honoré's 'Causal Factor Test'

Alternatively, the weak necessity/strong sufficiency test might be used to assist in identifying potentially confounding factors. This involves a fact-finder looking at the data and asking, 'Are these potentially confounding factors necessary to a set that is minimally sufficient for producing the sub-injury?' In answering this question, it is again likely that the labour strike and *salmonella* outbreak would not be found to be necessary to a minimally sufficient set. Whilst the labour strike may have played some small causal role, it is likely to be excluded from the set because the set must be *minimally* sufficient to cause the sub-injury. That is, as few causal factors as possible must be included in the calculation of sufficiency.[177] This represents a difference from the *sine qua non* test. Nonetheless, it is likely that both the earthquake and the increased competition for workers from the foreign cotton industry would be found to be necessary for a set of factors that is minimally sufficient to cause injury to the productivity of the cotton industry (a sub-injury). For a diagrammatic representation of Hart and Honoré's causal factor test to this example, see Figure 15 below.

[176] For an explanation of the 'hypothetical world problem', see Chapter I, Section [2.2], pages 12–14.
[177] See Chapter 1, Section [2.3], page 19 for an explanation of the importance of making a set minimally sufficient.

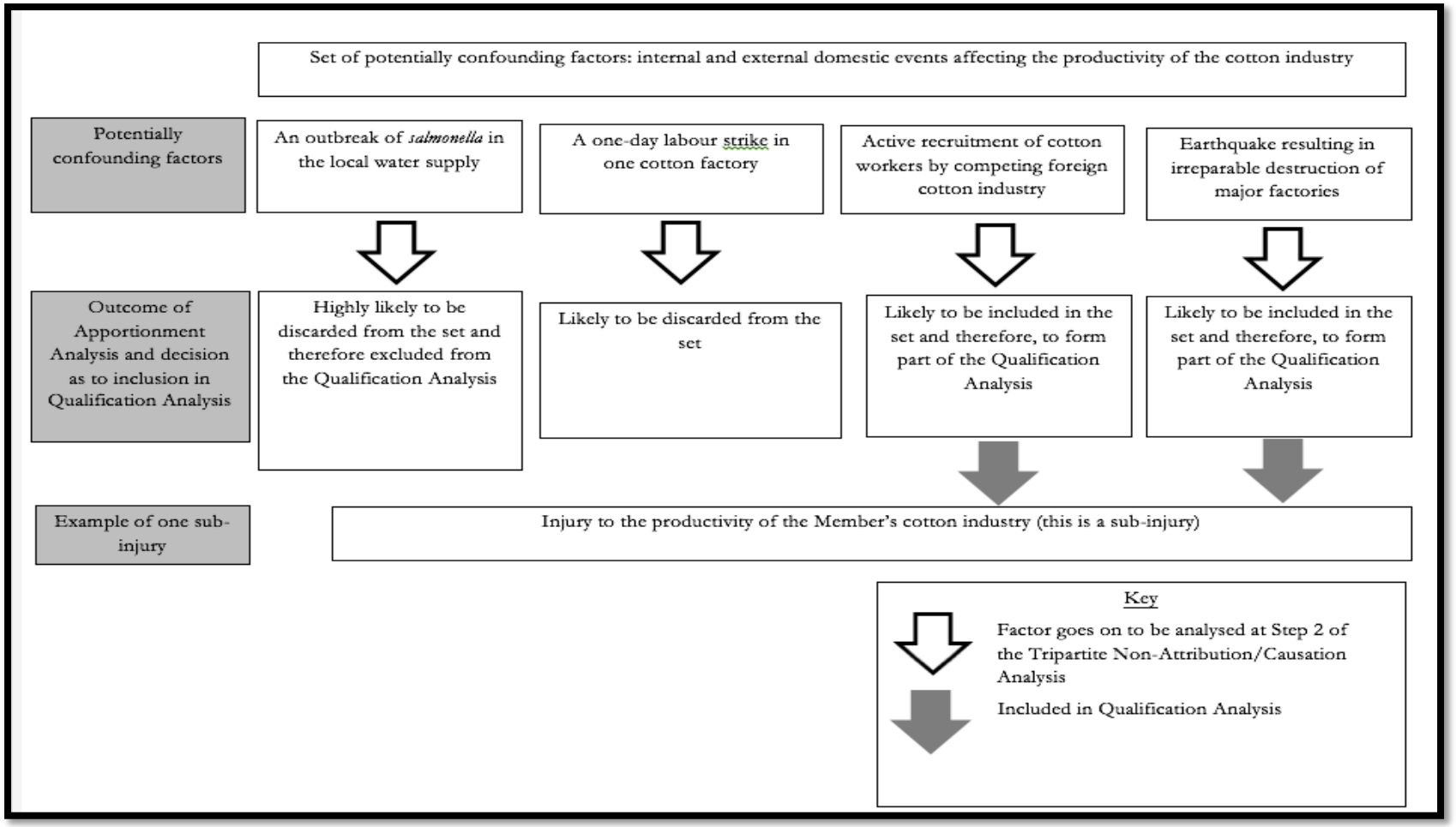

Figure 15: Step 2 of the Tripartite Non-Attribution/Causation Analysis: Example of applied apportionment causation test: Hart and Honoré's 'Causal Factor Test'

Wright's NESS Test

When deciding which of the weak necessity/strong sufficiency tests is the most suited to performing the Apportionment Analysis, it is important to consider the statement of the AB in *EC—Tube or Pipe Fittings* set out above. That is, it is worth recalling that in *EC—Tube or Pipe Fittings,* the AB said that, although not necessary in every case, there may be circumstances in which a domestic competent authority might need to consider the *collective effect* of potentially confounding factors in bringing about harm.[178] Further supporting the idea of the possible need for collective assessment of potentially confounding factors, the *EC—Tube or Pipe Fittings* Panel also said that it was:

> certainly aware of the theoretical possibility that a causation methodology which separates and distinguishes between individual injury factors may not accommodate the possibility that multiple 'insignificant factors' might *collectively* constitute a significant cause of injury such as to sever the link between dumped imports and injury.[179]

This requirement, although only a 'theoretical possibility', nonetheless suggests that domestic competent authorities and other authorities involved in the investigation process must be cognisant of the possibility that some independently insufficient potentially confounding factors might become sufficient when amalgamated with others. This requirement, more than any other, restricts the field of potential causal tests. This is because it requires a test that can aggregate multiple individual causal factors that are individually insufficient to have caused injury but may reach the threshold of sufficiency once so aggregated.

No causal test can fulfil the potential requirements of the AB in *EC—Tube or Pipe Fittings* so well as Richard Wright's NESS test. That is, it may be recalled from Section [2.3] of Chapter I that the focus of Hart and Honoré's 'causally relevant factor' test is on whether an *individual* causal factor within a set is necessary and sufficient to cause a sub-injury *on its own*. It might be further recalled that Wright[180] perceived this potential blind spot and corrected it at the outset in his revised NESS test in order to take account of contributory duplicative over-determination cases.[181] For this reason, Wright's NESS test is specifically designed to be able to amass individual insufficient causal factors into a set and then consider the sufficiency of that set to the sub-injury accordingly. Therefore, in order to take account of this theoretical possibility, it is suggested that Wright's NESS test is the most appropriate for performing the Apportionment Analysis.

It might be countered that the collective assessment of potentially confounding factors has only been raised as a potential issue in the antidumping context, and has not yet been considered in the safeguards or countervailing duties contexts. It might further be contended that it follows from this that the application

[178] AB, *EC—Tube or Pipe Fittings* (n 112) [192].
[179] Panel, *EC—Tube or Pipe Fittings* (n 111) [7.369] (emphasis original). See also, Panel, *EC—Tube or Pipe Fittings* (n 111) [7.388].
[180] In fact, it was Fraser and Howarth who first perceived this problem in the test: see Fraser and Howarth (n 72) (see, in particular, pages 133–45). Unfortunately, the legal causal philosophical literature has accredited Wright with this insight, and so this thesis continues to do so for consistency with the literature.
[181] Wright, 'Causation in Tort Law' (n 37) 1791–92. See Section [2.3] of Chapter I, especially pages 23–25.

of Wright's revised NESS test should only be considered for Article 3.5 of the Antidumping Agreement, and not Article 4.2 of the Safeguards Agreement or Article 15.5 of the SCM Agreement. This may be a possibility; but given that the *US—Hot Rolled Steel* and *US—Tyres (China)* Panel and the AB have been willing in their reasoning to draw analogies between the three provisions on account of their similar drafting, it would be prudent to draw on a causal test that can adapt to the potential for safeguards and countervailing measures jurisprudence to move in this direction.

Applying Wright's NESS test to the concrete example at hand, if the factory workers' one-day strike mentioned above is combined with other causal factors that are also individually insufficient, these may, once aggregated, become a set that is minimally sufficient to cause an injury. This is the scenario anticipated by the *EC—Tube or Pipe Fittings* Panel and the AB. For example, the workers' strike might be combined with other individually insufficient factors, such as excessively high absenteeism across all cotton factories in the industry, mass resignations from one particular factory and the malicious destruction of important equipment from a group of disgruntled workers in another factory. While none of these factors is individually sufficient to cause injury to the productivity of Member B's cotton industry, they may well be collectively sufficient to do so. This example is represented diagrammatically by the addition of the black arrow in Figure 16 below. Figure 17, which immediately follows Figure 16, diagrammatically represents the phenomenon of factors that are individually insufficient being pooled together to form a factor that is collectively sufficient to form part of a set.

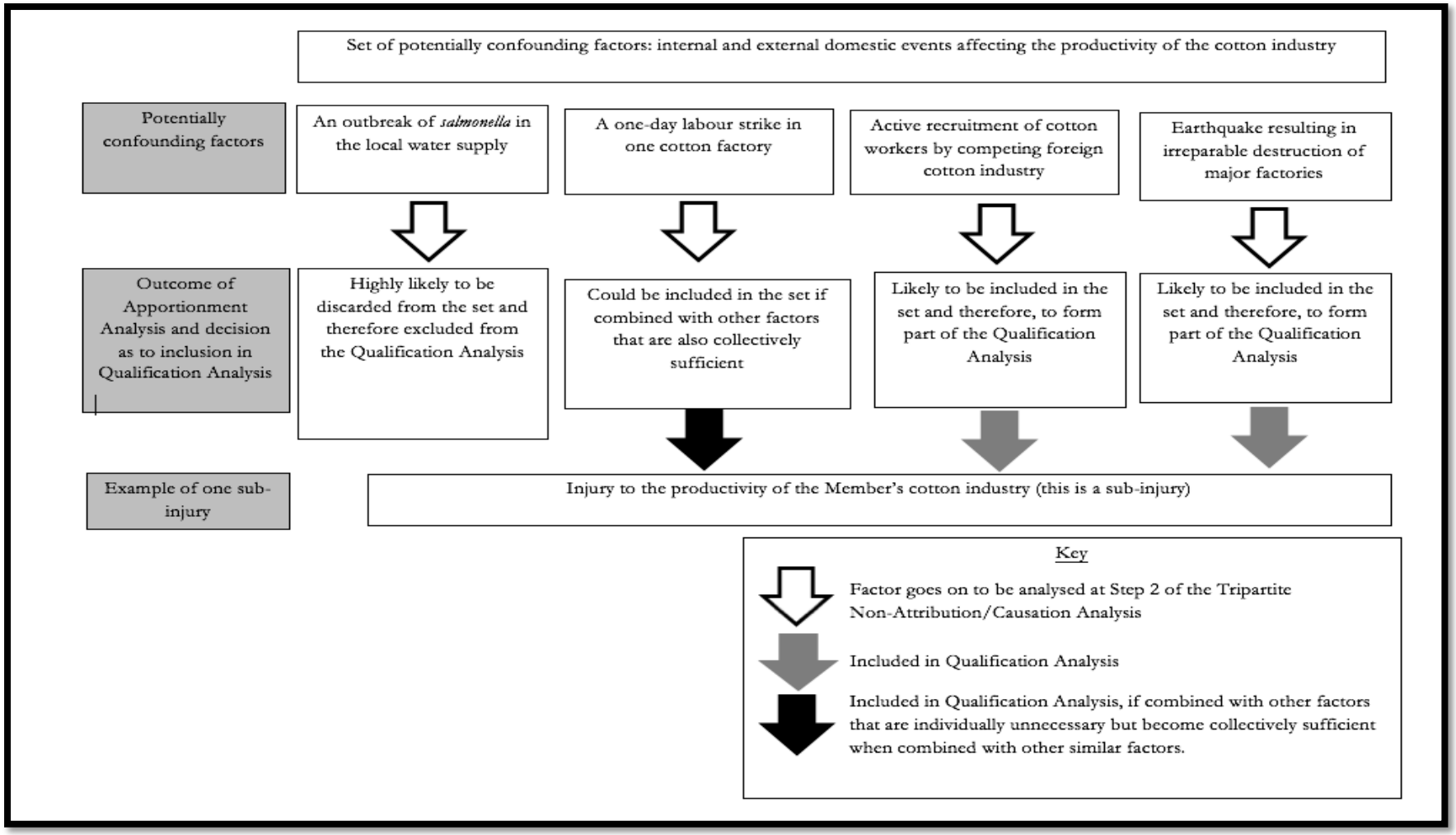

Figure 16: Step 2 of the Tripartite Non-Attribution/Causation Analysis: Example of applied apportionment causation test: Richard Wright's NESS test

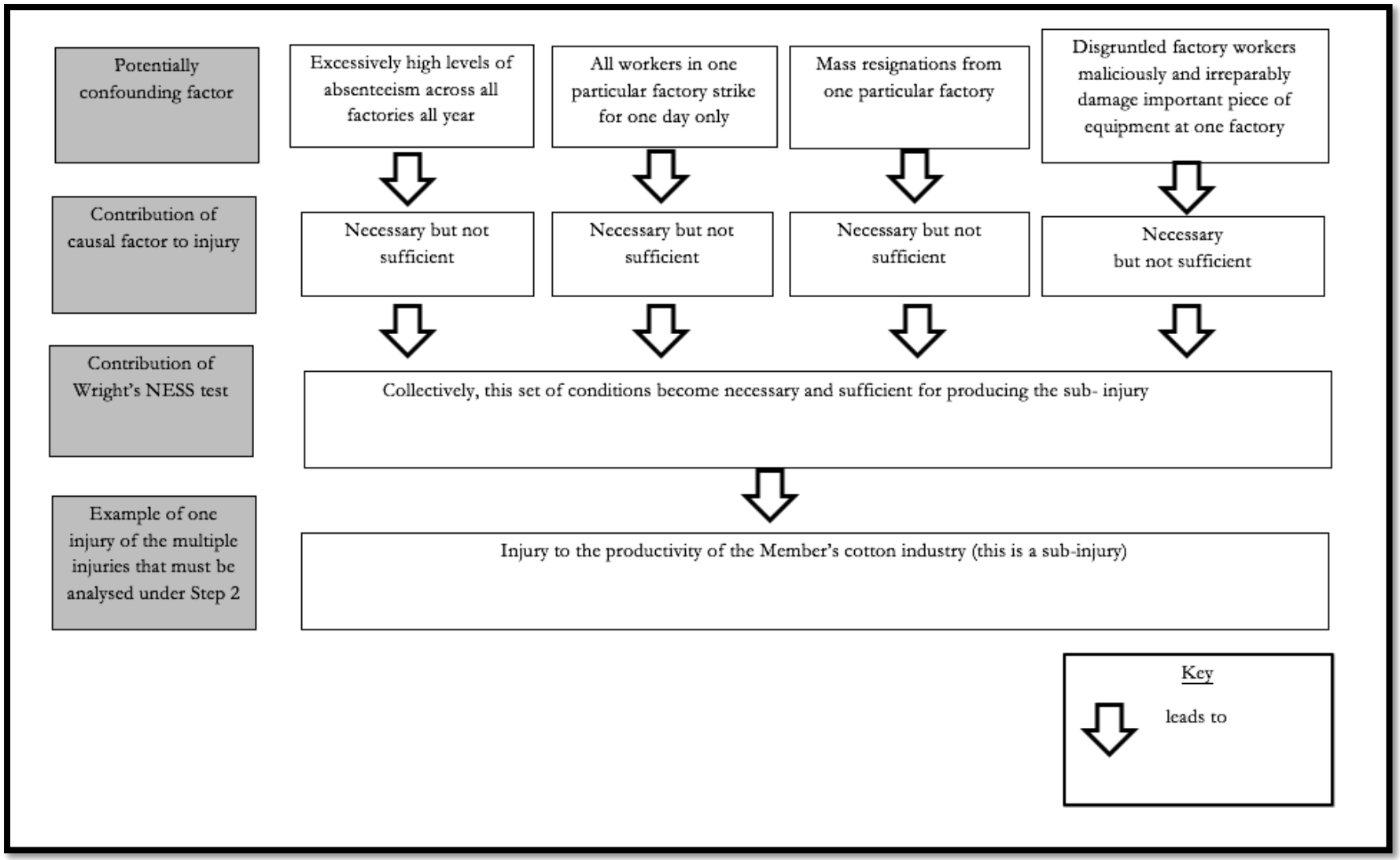

Figure 17: Step 2 of the Tripartite Non-Attribution/Causation Analysis: example of the aggregation of individually insufficient factors under Wright's NESS test

Conclusion

This survey of non-quantitative causal tests has demonstrated that the more inclusive approach facilitated by Wright's NESS analysis means that more potentially confounding factors will be identified at this stage than if Hart and Honoré's 'Causal Factor Test' or the *sine qua non* test were used. To see this difference diagrammatically, it is helpful to compare Figures 15 (at page 63) and 16 (at page 66) above. It can also be seen from comparing the operation of the *sine qua non test* with Wright's NESS test that the *sine qua non* test is as inclusive as Wright's NESS test. To see this diagrammatically, compare Figures 14 (page 61) and 16 (page 66) above. Although both the *sine qua non* test and Wright's NESS test obtained the same result, they did so using different methodologies. That is, the *sine qua non* test included factors that are technically necessary but only marginally so, whereas Wright's NESS test obtained the result by allowing a collection of individually insufficient factors to be aggregated to form a collectively sufficient factor. The final result is that, whilst the technically necessary factor would reach the Qualification Analysis stage (described below), it would be quickly dismissed as marginal at that stage. Conversely, the collectively sufficient factors under Wright's NESS test may well pass the qualification stage, since they are, once aggregated, far more substantial.

In sum, Wright's NESS test is the most inclusive of all the three non-quantitative causal tests discussed in this thesis. The fact that the NESS test includes more potentially confounding factors in its analysis means that it is more likely that causal responsibility for injury will be apportioned to potentially confounding factors rather than imports at the next Disentanglement stage. Concomitantly, it may be more difficult under Wright's NESS test to attribute causal responsibility for injury to imports alone. In practice, a Member's domestic competent authority has an incentive to try to attribute as much causal responsibility to imports as possible. This is because the Member's domestic competent authority would be trying to justify the legality of its safeguards/antidumping measures/countervailing duties by saying that they are a response to the injury caused by imports. It follows from this that it is extremely unlikely that any Member's domestic competent authority would voluntarily choose to use Wright's NESS test to identify potentially confounding factors. Instead, it is likely that Hart and Honoré's test would be used because it is the least inclusive of the three qualitative causal tests canvassed here. Whichever causal factor test is used, the end result of performing the identification stage is to have a short-list of potentially confounding factors that appear likely to have contributed to various sub-injuries and that will need to be disentangled from imports at the next stage of the Tripartite Non-Attribution/Causation Analysis.

(b) Disentanglement Stage

With the potentially confounding factors having been identified in the previous stage, it remains to canvas those methods by which the injurious effects of the potentially confounding factors might be disentangled from the injurious effects of imports. The purpose of the disentanglement stage is that the sub-injuries will be classified into the three categories of causal responsibility identified above—namely: (1) some sub-

injuries may have been caused exclusively by imports; (2) yet others, exclusively by potentially confounding factors; and finally, (3) by a combination of imports and potentially confounding factors.

The AB has emphasised that there is no prescribed methodology for determining causation for the purposes of introducing safeguards, antidumping measures and countervailing duties.[182] Therefore, domestic competent authorities have some discretion about the methodology they choose for disentangling the injurious effects of imports from potentially confounding factors. Nonetheless, in the dumping context, the AB said in *US—Hot Rolled Steel* that the AB would require 'a satisfactory explanation of the nature and extent of the injurious effects of the other factors, as distinguished from the injurious effects of the dumped imports.'[183] As Ahn and Moon observe, the implication of this statement is that a quantitative test must be used in order to perform the disentanglement exercise[184]—to this end, the use of the word 'extent' is particularly significant. Whilst this statement was made in the antidumping context, given the similarity in drafting between the provisions, it would be prudent for domestic competent authorities also to use quantitative causal tests as a means of disentangling imports from potentially confounding factors. Moreover, it was seen in Section [2.3] above that the Panel in *EC—Countervailing Measures on DRAM Chips* held that, in the countervailing measures context, an effort must be made 'to quantify the impact of other known factors, relative to subsidized imports'.[185]

Nedampura notes that it is worth considering that many WTO members would lack the capacity to use the sophisticated econometric tools necessary for performing a quantitative analysis.[186] This is an important point, but it is suggested that resource constraints should not be an obstacle to using what appears to be the most intuitive and compelling interpretation of the provisions. Instead, these considerations serve more to reinforce the importance of the WTO continuing to provide resources and support to those Members who need it in order to bring dispute settlement claims.[187]

A number of quantitative causal tests have already been developed and applied in order to quantify the effects of imports, and in some cases, disentangle them from the injurious effects of potentially confounding factors. The USITC has used a number of methods for determining the impact of imports vis-à-vis potentially confounding factors on the domestic industry in the context of safeguards and antidumping measures.[188] The first major approach was the 'Comparative Analysis of the Domestic

[182] In the safeguards context, see AB, *US—Lamb* (n 98) [181]; in the AD context, see AB, *US—Hot Rolled Steel* (n 107) [224]; and in the countervailing measures, see Panel, *EC—Countervailing Measures on DRAM Chips* (n 132) [7.405].
[183] AB, *US—Hot Rolled Steel* (n 107) [223].
[184] Ahn and Moon (n 16) 1031.
[185] Panel, *EC—Countervailing Measures on DRAM Chips* (n 132) [7.405] (emphasis original).
[186] Nedumpara (n 14) 6.
[187] For an overview of efforts being made to better include developing countries in the WTO dispute settlement system, see generally, Chad P Bown, *Self-Enforcing Trade: Developing Countries and WTO Dispute Settlement* (Brookings Institution Press 2009).
[188] For an overview of the five most common approaches used by the USITC in reaching material injury determinations in antidumping investigations, see: Seth Kapla, 'Injury and Causation in USITC Antidumping Determinations: Five Recent Approaches,' in PKM Tharakan (ed), *Policy Implications of Antidumping Measures* (Elsevier Science Publishers 1991). For an overview of approaches taken in relation to separating imports from potentially

Industry's Condition' model, which was then refined into the 'Commercial Policy Analysis System' (COMPAS). COMPAS makes its calculation based on six parameters that the analysis must 'guesstimate'[189]—namely, the aggregate US market elasticity of demand for the relevant product, the domestic producers' supply elasticity, the fair-traded import supply elasticity, the substitution of domestic product for subject imports, the substitution of a domestic product for fairly-traded imports and the substitution of subject imports for fairly-traded imports. The COMPAS model takes these inputs and calculates the effect of the imports on the domestic market. In so doing, the COMPAS model makes no attempt to disentangle the effect of imports on the domestic market from the effect of potentially confounding factors.[190] This failure to disentangle the causes of injury is inconsistent with the requirements of the Safeguards, Antidumping and Part V of the SCM agreements. Indeed, the AB has found the method to be inconsistent with the covered agreements on several occasions.[191] Given that it fails in this fundamental respect, any result brought about by this methodology is at risk of being found to be non-compliant with the covered agreements. Accordingly, it is suggested that the COMPAS model should be abandoned as a methodology for disentangling the injurious effects of imports vis-à-vis potentially confounding factors for the purpose of assessing the legality of safeguards, antidumping measures and countervailing duties.

Following a series of decisions from the AB that found the COMPAS methodology to be unsuitable, the USITC has adopted a number of econometric models to separate harm caused by imports from harm caused by potentially confounding factors. The econometric approach identifies those factors that affect supply and demand and then analyses and quantifies each of those effects.[192] The details and operation of the quantitative models that have been used by the USITC for safeguards[193] and antidumping[194] investigations have been set out elsewhere, and therefore will not be replicated here.[195] Econometric models based on the use of simultaneous equations have proved particularly useful and have been applied in a series of USITC investigations.[196] Unlike the COMPAS methodology, these tests actually do attempt to

confounding factors in antidumping and safeguards investigations, see JP Durling and MP McCullough, 'Teaching Old Laws New Tricks: The Legal Obligation of Non-Attribution and the Need for Economic Rigour in Injury Analyses Under US Trade Law,' in EK Choi and J Hartigan (eds), *Handbook of International Trade, Volume II* (OUP 2005).

[189] Prusa and Sharp (n 16) 67; and Durling and McCullough (n 181) 80.

[190] S Kaplan, 'Injury and Causation in USITC AD Determinations: Five Recent Approaches' in PKM Tharakan (n 181) 49; ME Morke and HE Kruth, 'Determining Whether Dumped or Subsidised Imports Injure Domestic Injuries' (1989) 7 Contemp Pol Issues 78–95 and Durling and McCullough (n 181) 80.

[191] In the Safeguards context, see AB, *US—Wheat Gluten* (n 12) [91]; AB, *US—Lamb* (n 98) [184]–[88]; WTO, *United States: Definitive Safeguard Measures on Imports of Circular Welded Carbon Quality Line Pipe from Korea—Report of the Panel* (29 October 2001) WT/DS202/R [7.283]–[7.290]; AB, *US—Line Pipe* (n 99) [218]–[22]. In the AD context, see the AB, *US—Hot Rolled Steel* (n 107) [227]–[236].

[192] For a discussion of the way of drawing inferences from economic modelling in antidumping, countervailing duty and safeguard investigations, see generally, James J Fetzer, 'Inference for Econometric Modeling in Antidumping, Countervailing Duty and Safeguard Investigations' (2009) 8(4) WTR 545.

[193] In the Safeguards context, see Pindyck and Rotemberg (n 13).

[194] In the Antidumping context, see Grossman (n 16); Prusa and Sharp (n 20); and Sharp and Zantow (n 16).

[195] An overview for non-economists can be found in Durling and McCullough (n 181).

[196] See, in the Antidumping context, eg, *Certain Cold-Rolled Steel Products* from Argentina, Brazil, China, Indonesia, Japan, Russia, Slovakia, South Africa, Taiwan, Thailand, Turkey, Venezuela (TA-393-396); *Certain Crabmeat and Certain Seamless*

separate those harms caused by imports from those caused by potentially confounding factors. These econometric tests do not show causation as such, but they do show correlation.[197] Various Panels and the AB have made statements to the effect that correlation is not decisive of causation, but that it is strongly indicative of it.[198] Moreover, the econometric tests endeavour to demonstrate correlation between a number of economic factors, rather than simply one factor, in order to give a better sense of the state of the market. Therefore, econometric tests that suggest correlation are still important in this analysis.[199]

These econometric models are very data-intensive, and cannot be relied upon in the absence of sufficient data.[200] Accordingly, where insufficient data is available to perform these econometric models, the USITC has tended to revert to its reliance on the use of the COMPAS methodology.[201] It has already been seen, however, that not only is the COMPAS methodology inaccurate, but that, more fundamentally, its failure to disentangle imports from potentially confounding factors has led the AB to find that it does not fulfil the legal requirements of the Antidumping and Safeguards Agreements. Accordingly, it is suggested that the COMPAS methodology should be abandoned by the USITC, even where there is insufficient data to perform econometric tests. Instead, there are a number of other methods that might be used in the alternative to the econometric approach. One alternative is the partial equilibrium model, which is based on supply and demand conditions in the market and has been advocated for by Kelly[202] and refined by Irwin.[203] The 'Cost of Production Test' put forward by Ahn and Moon merits further investigation as a second alternative.[204] Each method has pros and cons, and the method chosen will ultimately depend on the type and quality of data available.

Whichever method is used, the point of the disentanglement exercise is to apportion responsibility for the identified sub-injuries as follows: (a) 100% to imports; (b) 100% to potentially confounding factors; or (c) a percentage that represents that causal responsibility is shared by a combination of imports and potentially

Carbon and Alloy Steel Standard, Line and Pressure Pipe from the Czech Republic, Japan, Mexico, the Republic of South Africa and Romania (731-TA-846-850); *Certain Crabmeat from Swimming Crabs* (TA-201-71); and *Certain Carbon Steel Products* from Australia, Belgium, Brazil, Canada, Finland, France, Germany, Japan, Korea, Mexico, Netherlands, Poland, Romania, Spain, Sweden, Taiwan, and United Kingdom (AA192 1-197 Review).

[197] Sykes argues that, in the safeguards context, it is only possible to show correlation and not causation because increased imports do not *cause* 'serious injury' to the domestic industry, rather they are simply correlated with it: AO Sykes, *The WTO Safeguards Agreement: A Commentary* (OUP 2006) 164–66. As was stated in the introduction to this chapter, this chapter will not enter into a discussion of the economic merits of the provisions, as its focus is instead on the legal causal tests required to interrogate the provisions.

[198] Panel, *Argentina—Footwear (EC)* (n 91) [8.229]; AB, *Argentina—Footwear (EC)* (n 91) [145]; Panel, *US—Tyres (China)* (n 119) [7.234].

[199] For criticisms of relying on correlation as evidence of causation, see, in particular, Sykes, 'The Safeguards Mess' (n 13) 269–70; Sykes, 'The Causation Requirement' (n 13) 161–74; Devin Sikes, 'The Need for New Causation Standards in Antidumping, Countervailing Duty and Safeguard Actions' (2010) 7(1) MJIEL 39.

[200] Prusa and Sharp (n 16) 77; and Durling and McCullough (n 181) 80.

[201] Durling and McCullough (n 181) 80.

[202] Kelly (n 16).

[203] Irwin (n 16).

[204] Ahn and Moon (n 16) 1041–47.

confounding factors. With this breakdown of percentages in view, it remains to progress to the second part of the Tripartite Non-Attribution/Causation Analysis—namely, the Qualification Analysis.

2. *Qualification Analysis*

Once the apportionment of responsibility for individual sub-injuries is complete, it remains for domestic competent authorities to perform a Qualification Analysis as the last element of Step 2 of the Tripartite Non-Attribution/Causation Analysis. For a diagrammatic representation of Step 2, see Figure 13 at page 56. The purpose of the Qualification Analysis is for the domestic competent authority to decide whether a specific sub-injury is sufficiently attributable to imports alone that it can pass the non-attribution limb and qualify for final causation analysis under Step 3. To put it another way, if it is clear from the Apportionment Analysis that sub-injuries were more the result of potentially confounding factors than imports, these sub-injuries will not go on to be considered in the causation analysis at the tertiary stage. For example, if harm to Member B's cotton industry productivity is found to have been caused by 75% potentially confounding factors and 25% imports, the sub-injury of productivity will not be included in Step 3.[205] This example can be seen diagrammatically at Sub-Injury C, Figure 13 at page 56.

It is at this point where the distinction between the sufficiency of imports approach and the multi-factorial approach becomes critical. Under the Safeguard Panels' sufficiency of imports approach, only sub-injuries that were caused by imports alone qualified for consideration under Step 3 of the Tripartite Non-Attribution/Causation Analysis. Accordingly, those sub-injuries that were partially or entirely caused by potentially confounding factors would be excluded at this second stage of the non-attribution analysis from further consideration. As may be seen from the fully black arrow in Step 2 of Figure 13 at page 56, the fact that only sub-injuries caused exclusively by imports may be included in the causation analysis means that there are potentially far fewer inputs into the final causation analysis at Step 3. It follows from this that, under the sufficiency of imports approach, it is more difficult to reach the threshold of 'serious injury or threat thereof' and make out the concomitant causal link of a 'genuine and substantial relationship of cause and effect' between imports and 'serious injury or threat thereof' to domestic industry.

The way in which non-attribution should be conducted under the multi-factorial approach is less clear than under the sufficiency of imports approach. If the non-attribution test excludes all sub-injuries from further analysis unless they were produced by 100% imports, it would follow that: (1) the AB's multi-factorial approach would produce the same result as the sufficiency of imports approach; and (2) the second stage of the Tripartite Non-Attribution/Causation Analysis would be otiose, as would domestic competent authorities' efforts to apportion responsibility for a sub-injury between imports and potentially confounding factors. Indeed, writing on what appears to be the assumption that the threshold for non-attribution under

[205] The only way in which the injury to productivity could be included in the Step 3 analysis is if the *de minimis* threshold under the multi-factorial approach is as low at 5%, which is extremely unlikely. The discussion of *de minimis* thresholds is directly below.

the multi-factorial approach is this high, Irwin has argued that '[n]on-attribution requires the authorities to separate and distinguish the sources of injury but otherwise plays no substantive role in the proceedings and cannot affect the end result.'[206] Similarly, with specific reference to the safeguards context, Sapir and Trachtman have said that:

> The AB's position on non-attribution in the safeguards setting has always been incoherent: the AB believes that separation is required, but cannot articulate a purpose for separation given that (in its view) there is no need to determine that the increased imports (in that context) are sufficient on their own to cause serious injury.[207]

In the same vein, Mavroidis et al also contend on what seems to have been the same assumption that:

> While there is an obligation to separate and distinguish the nature and extent of the injury caused by other factors, it appears that the [AB] holds the view that there is no need to somehow quantify and deduct the injury caused by other factors from the injury caused by the dumped imports to determine whether the dumped imports alone were sufficient to cause material injury. What the goal of separating and distinguishing these other factors' effects then is, remains an open question.[208]

Irwin, Sapir, Trachtman and Mavroidis et al's assumption is a reasonable one in the sense that the AB has never explicitly held that there is a *de minimis* threshold for including sub-injuries in the non-attribution analysis if they fall below the 100% threshold.

Nonetheless, it is suggested that an alternative way of seeing this problem is that a *de minimis* threshold that is lower than 100% import-induced sub-injuries can be inferred from the AB's multi-factorial approach. Indeed, it is worth repeating that the AB has said that 'the language in the first sentence of Article 4.2(b) does *not* suggest that increased imports be *the sole* cause of the serious injury, or that "*other* factors" causing injury must be excluded from the determination of serious injury.'[209] In other words, sub-injuries caused by a *combination* of imports and potentially confounding factors may still be included in the final causation analysis. It surely follows from the AB's statement that the test for non-attribution must be something less than 100% import-induced, though the AB has not stated what this *de minimis* threshold is.

Indeed, the idea of a *de minimis* threshold that is less than 100% is consistent with the standard imposed by the US Trade Act of 1974 in relation to the imposition of safeguards.[210] To take the case of safeguards first, section 202 of the Trade Act provides that, when determining 'whether an article is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof',[211] the term 'substantial cause' should be taken to mean 'a cause which is important and not less

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[206] Irwin (n 16) 309.
[207] Sapir and Trachtman (n 17).
[208] Mavroidis, Messerlin and Wauters, *The Law and Economics of Contingent Protection in the WTO* (n 84) 122 (footnotes omitted).
[209] AB, *US—Wheat Gluten* (n 12) [67] (emphasis original).
[210] as amended through PL 114–27, enacted June 29, 2015.
[211] Section 202(b)(1)(A) of the Trade Act of 1974.

than any other cause'.[212] This definition of 'substantial cause' necessarily means that potentially confounding factors—whilst not as important as increased imports themselves—may still be included in the final assessment of causation. This definition, whilst helpful, still makes it difficult to assign any approximate figure to the *de minimis* threshold for the causation analysis. Accordingly, further guidance from the AB in this respect would be useful.

If, for example, the *de minimis* threshold for the non-attribution test is 90%, then those sub-injuries that were produced by 90% imports and 10% potentially confounding factors or less would not be discarded by the non-attribution analysis (see Sub-Injury A in Figure 13 at page 56). If, on the other hand, the *de minimis* threshold for the non-attribution test is 50%, then those sub-injuries that were produced by 50% imports and 50% potentially confounding factors or less would not be discarded (see Sub-Injury D, Figure 13 at page 56). Self-evidently, the lower the *de minimis* threshold in the non-attribution test, the more sub-injuries would go on to be included in the causation analysis under the tertiary step. Moreover, the more sub-injuries that are included in the causation analysis, the greater the likelihood, in turn, that the threshold of 'serious injury or threat thereof' would be reached and the causal link between imports and injury would be made out. From the perspective of the domestic competent authority trying to make out this causal link, then, the lower the *de minimis* threshold, the easier it is to demonstrate causation. The easier it is to determine causation, the easier it is, in turn, to justify the use of trade remedies.

Turning now to the *de minimis* threshold for antidumping measures and countervailing duties, it is suggested that the process for analysing causation should be identical to that which was described with respect to safeguards, except that the *de minimis* threshold used at the qualification stage would be far lower. Again, although the AB has not provided an indication of what this threshold should be, the United States Court of Appeals for the Federal Circuit (CAFC) has suggested a standard that represents a helpful starting point. That is, the CAFC said that, with respect to making a determination in relation to antidumping measures, that, '[a]s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement.'[213] Whilst it is difficult to translate this into numerical terms, it is likely that, if this definition were accepted by the AB, the sub-injuries that have been found to have been caused by at least 10% dumped imports would pass the Qualification Analysis. This much lower threshold reflects the fact that antidumping measures are generally less trade-restrictive than safeguard measures.[214] Having examined the first two steps of the Tripartite Non-Attribution/Causation Analysis for analysing the non-attribution and causation requirements of the provisions, it remains now to turn to the third step.

[212] Section 202 (b)(1)(B) of the Trade Act of 1974.
[213] *Nippon Steel Corp. v USITC*, 345 F.3d 1379, 1384, 4 (Fed. Cir. 2003).
[214] Mavroidis, Messerlin and Wauters, *The Law and Economics of Contingent Protection in the WTO* (n 84) 465–66.

[5.0] Causation: The Third Step of the Tripartite Process

[5.1] Introduction

The AB has offered little guidance as to how this last step should be undertaken. Under the Safeguards Agreement, it seems to involve two components: (1) the domestic competent authority should determine whether there is a causal link between imports and 'serious injury or threat thereof'; and (2) if such a link exists, domestic competent authorities ought to determine whether such a causal link involves a 'genuine and substantial relationship of cause and effect'.[215] Again, whilst this language only pertains to the Safeguards Agreement, the Antidumping Agreement also requires that some causal link between imports and injury is found.[216]

[5.2] USITC and the European Commission's Approach to Causation in relation to Safeguards, Antidumping Measures and Countervailing Duties

In the absence of detailed guidance from the AB as to how to draw a causal link between imports and injury, it might seem useful to look at how domestic competent authorities have performed this causation analysis in relation to safeguards, antidumping measures and countervailing duties. In the US safeguards context, the Senate Finance Committee expressly held that 'weighing causes' should not be performed,[217] and instead, the USITC need only 'assure themselves' that imports are a substantial cause.[218] This is a different standard to Article 4.2 of the Safeguards Agreement. Moreover, in the Antidumping context, the phrase 'by reason of' in 19 U.S.C. §1674 and §1673d(b)(1) has been interpreted as requiring a causal nexus between dumped imports and injury.[219] The CAFC has also found that the statute does not compel the USITC to use any particular methodology for performing this causation analysis.[220] To the contrary, the CAFC has affirmed numerous different methodologies and has rejected 'rigid adherence to a specific formula'.[221] Finally, in the context of countervailing measures, the United States' countervailing duty legislation provides that countervailing duties may be imposed where an industry is materially injured 'by reason of imports'.[222] The USITC does not need to determine whether subsidised imports are the principal cause of material injury—rather, only that the subsidised imports contributed to the injury.[223] Again, this represents a difference from Article 15.5 of the SCM Agreement. As Easton and Perry observe, the

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[215] ibid [69].
[216] AD Agreement (n 7) art 3.5.
[217] The Senate Finance Committee Report, in United States Code Congressional and Administrative News No. 1298, 121–22.
[218] ibid 120.
[219] *Gilford-Hill Cement Co. v United States*, 615 F. Supp. 577, 579 (Ct. Int'l Trade 1985); *American Spring Wire Corp. v United States,* 590 F Supp 1273, 1276 (Ct. Int'l Trade 1984).
[220] *Angus Chemical Co v United States*, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998).
[221] *Nucor Corp v United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005).
[222] 19 US Code §1671(a)(2).
[223] ER Easton and WE Perry, 'Countervailing Duty Investigations' in CR Johnston Jr (ed), *Law and Practice of United States Regulation of International Trade* (Oceana Publications 1989) 44. For an overview of the law concerning the determination of causation in respect of Antidumping cases under US law, see generally, William D Degrandis, 'Proving Causation in Antidumping Cases' (1986) 20(2) Int Lawyer 563.

consequence of this standard is that 'respondents must be able to demonstrate that *virtually all* the problems of the domestic producers are caused by factors unrelated to import competition.'[224] Given the burden of demonstrating this, it has been very unusual for the USITC to use any potentially confounding factors as a basis for a negative determination.[225]

In the EU safeguards context, Articles 16 and 17 of Regulation 260/2009 provide that, in order for the EU to implement safeguard measures, it must be established that the serious injury sustained by Union producers is caused by the increased quantities of imports. Article 10(1)(d) provides that factors other than trends in imports that are causing or may have caused injury to producers must be assessed in determining whether serious injury or threat thereof has occurred. Again, the European Commission did not use any specific method for separating safeguard measures from potentially confounding factors. It used a non-quantitative approach to try to separate the two and then to adjudicate if it is likely that the potentially confounding factors severed the causal link.[226]

In terms of antidumping, the investigation into causality at the EU level involves both a positive test and a negative test. The positive test, namely, Article 3(6) of Regulation 1225/2009,[227] does not specifically require injury to be caused 'through the effects of dumping'. Accordingly, it is sufficient to make an injury determination when the volume and/or price levels of the dumped imports indicate that dumping was a significant cause of injury, even though there may be more significant causes than the dumping.[228] To this extent, the EU antidumping positive test has similarities with the US approach. The negative causality test is set out in Article 3(7) of the same regulation. It provides that: 'known factors other than the dumped imports which at the same time are injuring the Community industry shall also be examined to ensure that injury caused by these other factors is not attributed to the dumped imports under paragraph 6'. The European Commission has not used any clear methodology for conducting this non-attribution requirement.[229]

Finally, in respect of countervailing duties, Article 8(5) of *Regulation 2016/1037*[230] requires a demonstration that the injury is the result of the subsidised imports. Article 8(5) provides that such a demonstration of a causal link 'shall entail demonstrating that the volume and/or price levels identified (…) are responsible for an impact on the Union industry (…) and that that impact exists to a degree which enables it to be classified as material.' Article 8(6) provides for a non-attribution requirement, as it provides that '[k]nown factors,

[224] ibid.
[225] Benitah, *The Law of Subsidies under the GATT/WTO System* (n 85) 292.
[226] For a discussion of some cases in the safeguards context that concern the issue of causality, see Van Bael & Bellis, *EU AD and Other Trade Defence Instruments* (Kluwer 2011) 731–35.
[227] Council Regulation (EC) No 1225/2009 of 30 November 2009 on protection against dumped imports from countries not members of the European Community, OJ (L 343) 51; see Annex 1.
[228] Van Bael & Bellis (n 219) 335.
[229] For a survey of AD cases in the EU context related to the negative causality test, see Van Bael & Bellis (n 215) 342–76.
[230] Council Regulation (EC) 2016/1037 of 30 June 2016 on protection against subsidised imports from countries not members of the European Union [2016] OJ L176/55.

other than the subsidised imports, which are injuring the Union industry at the same time shall also be examined to ensure that the injury caused by those other factors is not attributed to the subsidised imports (…).' *The Commission Staff Working Document* states that the requirement of a causal link between subsidy and injury may be 'fulfilled when the injury to the EU industry coincides with the increase in (…) subsidised imports. It is important to note that the (…) subsidised imports do not have to be the only cause of the injury.'[231] The Commission brought an anti-subsidy investigation concerning the import of certain rainbow trout originating in Turkey into the Union.[232] In that case, the Commission examined potentially confounding factors and made a decision, based on non-quantitative considerations, that none of those that were raised by the interested parties broke the causal link between the subsidy/ies and the injury. For example, one of the interested parties claimed that the injury was caused by competition with other fish species.[233] The Commission responded that:

> The alleged competition from other species could in any event not explain the overall economic and financial determination of the Union industry and especially the loss of market share compared to the imports from Turkey, which were increased over the period considered.[234]

The Commission did not make clear what methodology it used to make this claim (if any), and it seems that the claim was made using non-quantitative considerations.

In sum, it has been seen that the USITC and the EU Commission use different causal thresholds than that which are set out in the WTO agreements and the European Commission overwhelmingly uses the 'break the causal link' approach, the problems with which were discussed in Section [3.0] above. The fact that the method for determining safeguards, antidumping duties and countervailing measures is contrary to the Tripartite Non-Attribution/Causation Analysis does not render the US and EU process illegal, however, since the AB has explicitly said that the Tripartite Non-Attribution/Causation Analysis is not a series of mandatory tests.[235] Nonetheless, it is suggested that it would not be helpful to borrow the approaches of the USITC or the European Commission in this context.

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[231] European Commission, *Commission Staff Working Document accompanying the document Report from the Commission to the European Parliament and the Council 34rd [sic] Annual Report from the Commission to the European Parliament and the Council on the EU's Antidumping, Anti-Subsidy and Safeguard Activities (2015)*, Brussels, 18 October 2016, SWD (2016) 330 final, [2.1.1.2].
[232] Council Regulation (EC) 2015/309 of 26 February 2015 imposing a definitive countervailing duty and collecting definitively the provisional duty imposed on imports of certain rainbow trout originating in Turkey [2015] OJ L56/12.
[233] ibid 101.
[234] ibid 103.
[235] AB, *US—Lamb* (n 98) [178].
[235] ibid.
[235] AB, *US—Wheat Gluten* (n 12) [69].
[235] Panel, *EC—Tube or Pipe Fittings* (n 111) [7.357]–[7.368].
[235] AB, *US—Lamb* (n 98) [178].

[5.3] Causation Analysis in Relation to Safeguards, Antidumping Measures and Countervailing Duties under the Tripartite Non-Attribution/Causation Analysis

Despite the lack of guidance from the AB and domestic competent authorities alike, it remains to set out how Step 3 of the Tripartite Non-Attribution/Causation Analysis might be performed with what little information is at hand. That is, once the domestic competent authority has aggregated all of the sub-injuries, it must then decide whether there is a causal link between imports and 'serious injury or threat thereof'. Self-evidently, the more significant the sub-injuries that qualify for inclusion at this step are, the more likely that a causal link between imports and 'serious injury or threat thereof' will be made out, and the more likely, in turn, that such a causal link will be found to be a 'genuine and substantial relationship of cause and effect'. It is for this reason that the interpretative choices made in Step 2 of the Tripartite Non-Attribution/Causation Analysis are so critical. Specifically, (1) the multi-factorial approach as opposed to the sufficiency of imports approach; and (2) the lower *de minimis* threshold under the multi-factorial approach both have the effect of increasing the number of sub-injuries that qualify for analysis in Step 3.

After having made these necessary interpretative choices, it remains to turn to the question of what is the most appropriate causal test for determining whether a causal link exists between imports and 'serious injury or threat thereof'. Leys and Tayal have each separately proposed that the *sine qua non* test is the most appropriate for determining causation in the safeguard context.[236] Narayanan also argues in favour of a *sine qua non* test in the context of an allegation of material injury in the dumping context.[237] Nedumpara contends that the *sine qua non* test might be appropriate in circumstances where increased imports/dumped or subsidised imports are the most probable cause of injury.[238] To perform the *sine qua non* test in light of the steps that have been proposed before, this would involve: (1) aggregating all the sub-injuries to which increased imports had contributed; (2) looking solely at the contribution of the imports; and (3) asking 'but for the increased imports, would the Member's domestic economy have suffered from 'serious injury or threat thereof?'

It is argued that use of the *sine qua non* test in this context is fundamentally flawed. It has been seen that the *sine qua non* test relies solely on the quality of *necessity*. It is worth recalling the meaning of necessity as it was explained in the context of the chocolate machines in Chapter I—namely, a necessary condition for an effect may be defined as a condition that must be satisfied in order for that effect to be brought about.[239] In other words, the *sine qua non* test would be interrogating whether the sub-injuries were a pre-condition for bringing about the finding of 'serious injury or threat thereof'. In reality, however, it is obvious that the sub-injuries are necessary for such a finding. Indeed, it is impossible to make a finding of overall injury

[236] Leys (n 15) and Tayal (n 15). Nedumpara criticises the use of the *sine qua non* test in this context, but for different reasons than that which has been suggested here: Nedumpara, 'Causation in Trade Remedy Actions' (n 166) 402.
[237] Prakash Narayanan, 'Injury Investigations in "Material Retardation" Antidumping Cases' (2004) 25(1) Nw J Int'l L & Bus 37, 59.
[238] Nedumpara (n 14) 106.
[239] See Chapter I, page 11.

without the inclusion of sub-injuries. Accordingly, if the *sine qua non* test were used in this context, it is difficult to see a circumstance where the *sine qua non* test would *not* find that the sub-injuries were necessary for the finding of 'serious injury or threat thereof'. In short, use of the *sine qua non* test in this context is redundant.

Instead, the causal inquiry must be one that involves the criterion of *sufficiency*. In this vein, it is helpful to recall the meaning of a sufficient condition developed in Chapter I—that is, a sufficient condition is one that, if satisfied, guarantees the effect.[240] It is suggested that this is a more appropriate causal criterion for determining whether the sub-injuries are sufficiently numerous and serious to amount to a finding of 'serious injury or threat thereof'. In other words, the inquiry interrogates whether, once the injurious effects of the potentially confounding factors are separated, the injurious effects of the imports are sufficient as a set to have caused the sub-injuries. Indeed, sharing this intuition, Sykes says, '[i]f increased imports need not suffice to cause serious injury (…) but must simply have made some contribution to injury, what is the point of the non-attribution requirement?'[241]

This thesis has discussed three causal tests that use a sufficiency criterion: (1) Hart and Honoré's 'causal factor test'; (2) Wright's NESS test; and (3) Mackie's INUS test. Ahn and Moon contend that Mackie's INUS test is the ideal causal test to use in making a determination as to whether the imports are sufficiently serious to amount to a finding of 'serious injury or threat thereof'.[242] Ahn and Moon are correct in their analysis; but it is suggested that Hart and Honoré's 'causal factor test' or Wright's NESS test would be equally appropriate in this context. Whichever one of these three causal tests is used, each has the ability to interrogate whether an identified sub-injury is a necessary element of a set of sub-injuries that is collectively sufficient to bring about a finding of 'serious injury or threat thereof'. The process of aggregating sub-injuries using a weak necessity/strong sufficiency test may be seen in Figure 18 below.

[240] See Chapter I, pages 11–12.
[241] Sykes, 'The Causation Requirement' (n 13) 179.
[242] Ahn and Moon (n 16) 1049–51.

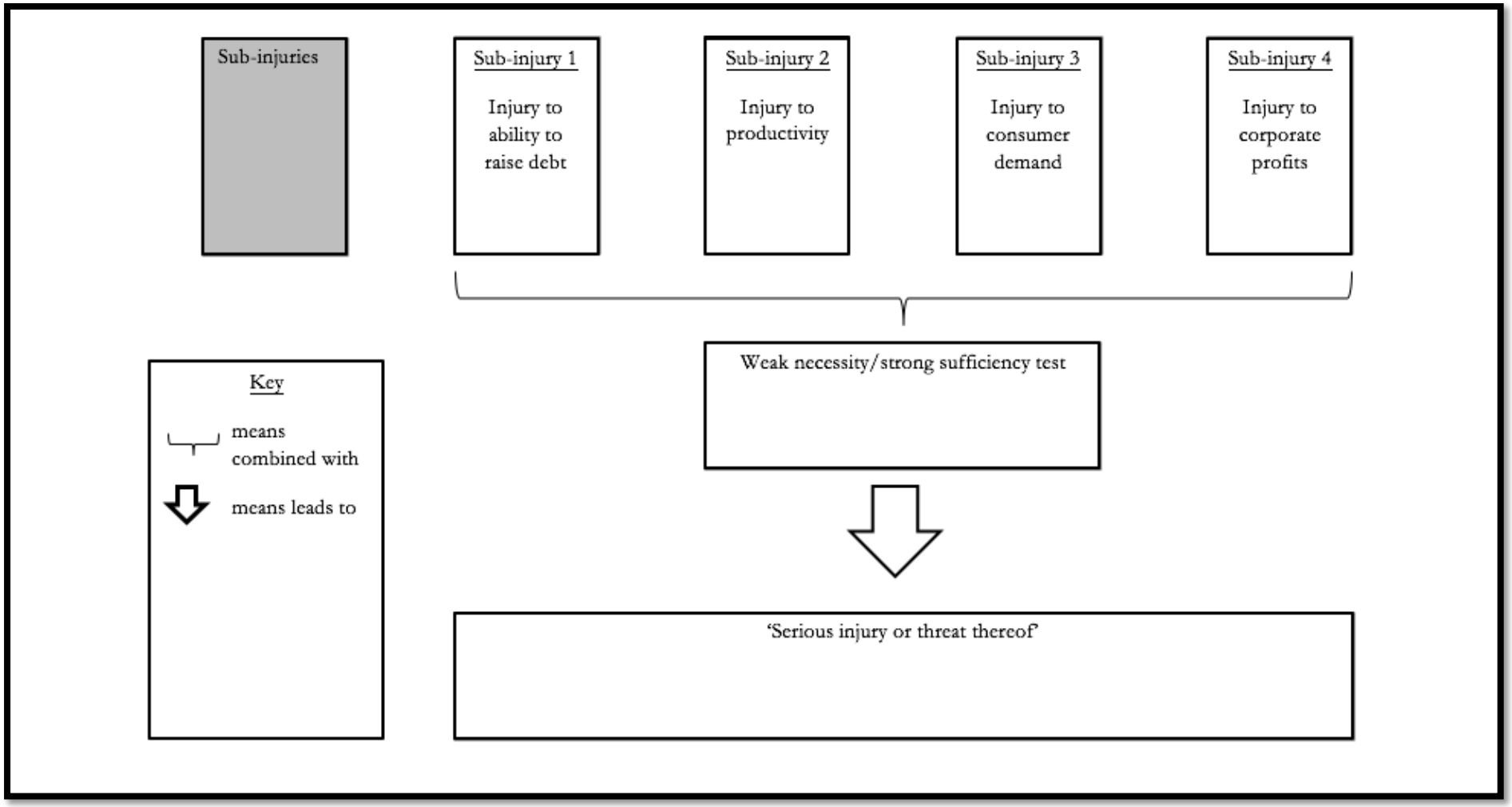

Figure 18: Step 3 of the Tripartite Non-Attribution/Causation Analysis: Causation Analysis

The rest of this chapter will use Wright's NESS test to complete the analysis simply because it is conceptually easier to apply, but it does so on the understanding that Hart and Honoré's 'causal factor test' or Mackie's INUS test could also be used. The application of the NESS test to the causation analysis in the safeguards context may be illustrated by returning to the example of the cotton industry and the introduction of safeguards as set out in Figure 13 at page 56. If the multi-factorial approach were used, and a 90% *de minimis* threshold applied at the Qualification Analysis stage, two sub-injuries would be considered at Step 3. On the other hand, if the multi-factorial approach were used, and a 50% *de minimis* threshold were adopted at the Qualification Analysis stage, three sub-injuries would be included in the analysis at Step 3. These alternative analyses and the effect of the different *de minimis* thresholds may be seen in Step 2 of Figure 13 at page 56. Due to the trade-distorting quality of safeguards, it is suggested that the threshold should be closer to 90% than 50%; but, without more specific guidance from the AB, it is difficult to offer a more precise figure. Whichever figure is used, the decision-maker would be required to look at those sub-injuries that had qualified for the third stage of the Tripartite Non-Attribution/Causation Analysis and ask whether each sub-injury was necessary to a set of sub-injuries that was, in turn, sufficient to cause 'serious injury or threat thereof'.

If the domestic competent authority does find a causal link, the final stage involves a determination as to whether the causal link represents a 'genuine and substantial relationship of cause and effect'. Unfortunately, this wording does not offer much in the way of concrete guidance as to how the causal relationship between imports and injury should be demonstrated.[243] Nonetheless, it is contended that it is of a higher *de minimis* threshold than the causation standard used in the Qualification Analysis. This is because, whereas the AB has given statements that suggest that the *de minimis* threshold in the Qualification Analysis context should be reduced, it has made no such statements relating to the causation analysis in the third step.[244]

Returning to the case of Member B's cotton industry, then, it seems highly likely that, if three sub-injuries are included in the final analysis, the causal link between imports and 'serious injury or threat thereof' would be found to be a 'genuine and substantial relationship of cause and effect'. If only two sub-injuries are included in the final analysis, it is still likely that a domestic competent authority's finding of a 'genuine and substantial relationship of cause and effect' would be held to be reasonable, though this would be a more borderline case. It is for cases such as these that more guidance from the AB would be helpful.

[243] Lacey (n 14) 26.
[244] See also Ahn and Moon (n 16) 1028.

[6.0] Conclusion

The provisions of the trade remedies agreements each require a Member to demonstrate that another Member's imports have caused injury to the domestic market before the relevant trade remedies might be implemented. To that end, they require a Member to conduct both a non-attribution as well as a causation analysis, so as to ensure that potentially confounding factors are separated from the impact of imports when determining causation. Other than these two requirements, the trade remedies agreements offer little guidance as to how to perform these causation requirements. The jurisprudence offers some additional guidance, but still leaves much to the discretion of domestic competent authorities. It was seen that one approach used by domestic competent authorities is the 'breaking the causal link' approach, which involves making a provisional determination as to causation before assessing whether any potentially confounding factors 'break' that causal link. It was argued that this approach has a number of flaws to it, and arguably a superior approach might be derived from the three-step process set out in paragraph [69] of *US—Wheat Gluten,* which this thesis has taken up and termed 'The Tripartite Non-Attribution/Causation Analysis'.

This chapter has sought to propose a methodology for negotiating the difficult causal questions embedded in the provisions. In doing so, this chapter has noted that there are various interpretative choices that the AB has signalled should be made in Step 2 of the Tripartite Non-Attribution/Causation Analysis that affect the quantity of sub-injuries likely to qualify for the third step—the causation analysis. The first interpretive choice is the 'sufficiency of imports approach' vis-à-vis the 'multi-factorial approach', and the second is the *de minimis* threshold that is permissible for sub-injuries to pass the Qualification Analysis at Step 2 of the Tripartite Non-Attribution/Causation Analysis. As the worked example of Member B's cotton industry demonstrated, these choices significantly influence the ease or difficulty with which a Member can legally demonstrate causation and introduce safeguards, antidumping measures and countervailing duties. This chapter has settled upon Wright's NESS test as the best test for determining causation at the Identification of Potential Causal Factors Stage in Step 2 as well as the causation stage in Step 3—though, in the latter stage, any weak necessity/strong sufficiency test could be used.

From a policy perspective, the interpretative choices used, as well as the causal thresholds selected, are crucial. This is because safeguard, antidumping measures and countervailing duties are inherently trade-restrictive. It follows that, if methods are selected that make it too easy to draw the causal link between imports and injury, this may more easily erode the principle of non-discrimination between trading partners. If this were to occur, the WTO's aspiration for a 'level playing field'[245] of world trade, to which the principle of non-discrimination is ultimately directed, is, in turn, more easily undermined.

[245] *The Future of the WTO* (n 90) 15.

Chapter III: Serious Prejudice under the SCM Agreement

[1.0] Introduction

The SCM Agreement provides, inter alia, for the disciplines surrounding the use of subsidies and the use of countervailing duties to offset injury occasioned by subsidised imports. The non-attribution and causation requirements embedded into the disciplines that concern the use of countervailing duties were discussed in the previous chapter, and so will not be revisited again in this chapter. Instead, this chapter is concerned with the causal considerations involved in making out that a subsidy is actionable under the SCM Agreement. That is, Article 5 of the SCM Agreement sets out three forms of 'adverse effects' that are potentially the result of subsidies and, if demonstrated, are actionable. So far, with the exception of one case, all claims alleging 'adverse effects' as a result of a subsidy have been brought in relation to the third of the listed potential adverse effects—namely, serious prejudice, set out at Article 5(c) of the SCM Agreement.[246] As a result, the focus of this chapter is confined to a consideration of the causal requirements involved in a determination of serious prejudice.

According to Article 5(c), a Member should not, through its subsidies, cause serious prejudice to the interests of another Member. The term 'serious prejudice' is not defined in Article 5; but Article 6.3 sets out the circumstances in which serious prejudice 'may' be held to apply. In seeking to interpret the term 'serious prejudice', the Panel in *Korea—Commercial Vessels* held that serious prejudice is a different concept from injury.[247] That is, according to the Panel in that case, serious prejudice is not so much concerned with the condition of a Member's particular domestic injury, as with the 'negative effects on a Member's trade interests in respect of a product caused by another Member's subsidization.'[248] The Panel therefore concluded that:

> Serious prejudice to a Member's interests, in the sense of *SCM* Article 5(c), consists of adverse effects on that Member's trade in a particular product in a specified market, resulting from

[246] The only exception to this is WTO, *United States: Continued Dumping and Subsidy Offset Act of 2000—Report of the Panel* (16 September 2002) WT/DS217/R; WT/DS234/R. In that case, Mexico claimed that both the granting and maintaining of subsidies by the *Continued Dumping and Subsidy Offset Act of 2000* (CDSOA) caused 'non-violation' nullification or impairment. The Panel found against Mexico, saying that Mexico had failed to demonstrate that the CDSOA had caused 'adverse effects' within the meaning of Article 5(b) of the SCM Agreement. As this case does not relate to serious prejudice, it is beyond the scope of this chapter.
[247] WTO, *Korea: Measures Affecting Trade in Commercial Vessels—Report of the Panel* (7 March 2005) WT/DS273/R (Panel, *Korea—Commercial Vessels*) [7.578].
[248] ibid.

> subsidization by another Member. That is, the situations listed in Article 6.3(a) – (d) in themselves constitute serious prejudice.

In *US—Cotton,* the United States argued before the Panel that the use of the word 'may' in the chapeau of Article 6.3 indicates that serious prejudice may or may not exist, even if the circumstances enumerated in Article 6.3 are made out.[249] The Panel rejected the United States' argument, however, and found that a demonstration of at least one of the situations listed in Article 6.3 is a necessary basis to conclude that serious prejudice exists.[250] In other words, making out one or more of those effects-based phenomena is sufficient for a finding of serious prejudice.

There are some similarities between a determination of serious prejudice under the SCM Agreement and a determination of 'injury' under the trade remedy agreements, which was discussed in Chapter II. In particular, like a finding of 'injury' under the trade remedy agreements, a determination of serious prejudice requires both a non-attribution analysis and a causation analysis. This means that a fact-finder must make a determination as to whether the market phenomenon is caused by subsidies, and to that end, must be careful not to attribute blame to subsidies for those things that were, in fact, caused by potentially confounding factors. Nonetheless, Articles 5 and 6.3 'do not contain the more elaborate and precise "causation" and non-attribution language which is contained in the trade remedy [agreements]'.[251] The Panel and the AB have interpreted this less directive language in Articles 5 and 6.3 as an indication that they have greater discretion as to how to conduct the non-attribution and causation analyses contained in those provisions.[252]

Another significant difference between determining injury under the trade remedy agreements vis-à-vis serious prejudice under Articles 5 and 6.3 of the SCM Agreement is that the latter is performed by a Panel or the AB, as opposed to a domestic competent authority. It follows from this that the Panel and the AB have more control regarding the processes by which the non-attribution and causation analyses are performed with respect to a finding of serious prejudice than they do with respect to a finding of 'injury' under the trade remedy agreements.[253] One of the consequences of the degree of discretion that the Panels and the AB have in relation to determinations of serious prejudice is that there is a certain amount of variation in the jurisprudence in relation to how the non-attribution and causation analyses are performed.

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[249] WTO, *United States: Subsidies on Upland Cotton—Report of the Panel* (8 September 2004) WT/DS267/R (Panel, *US—Upland Cotton*) [7.1369].
[250] Panel, *US—Upland Cotton* (n 242) [7.1380]. See also WTO, *Indonesia: Certain Measures Affecting the Automobile Industry—Report of the Panel* (2 July 1998) WT/DS54/R; WT/DS55/R; WT/DS59/R; WT/DS64/R (Panel, *Indonesia—Autos*) [14.238] where the Panel also equated a finding of one or more of the effects-based phenomena listed in Article 6.3 with a finding of serious prejudice.
[251] Panel, *US—Upland Cotton* (n 242) [7.1343].
[252] WTO, *United States: Subsidies on Upland Cotton—Report of the Appellate Body* (3 March 2005) WT/DS267/AB/R (AB, *US—Upland Cotton*) [436].
[253] An exception to this is where the Panel and AB are required to perform a *de novo* review of a domestic authority's finding of 'injury' under the trade remedy agreements.

This chapter will argue for a more consistent approach to conducting the non-attribution and causation analyses for the purposes of determining serious prejudice. One source of variation in the jurisprudence with respect to how the non-attribution and causation analyses are performed under Articles 5 and 6.3 of the SCM Agreement relates to whether the causal relationship between the subsidy/ies and the market phenomenon is drawn in one step (the unitary approach) or two steps (the bifurcated approach). The chapter that follows argues strongly in favour of the bifurcated approach. Another source of variation in the jurisprudence relates to the role of the causation analysis. Whilst each of the cases use some form of counterfactual analysis, the particular form this takes varies between cases. Moreover, some cases employ an implicit weak necessity/strong sufficiency test in the way in which they collect the effects of subsidies together, whilst others do not. The Tripartite Non-Attribution/Causation Analysis is put forward as an alternative approach to more accurately and consistently interrogate the relationship between subsidies and the relevant market phenomenon. This chapter turns now to discuss the state of the jurisprudence in relation to how non-attribution and causation analyses are performed in relation to determinations of serious prejudice.

[2.0] Jurisprudence Concerning Non-Attribution and Causation in respect of a Serious Prejudice Determination

Due to the importance of the provisions to this chapter, the relevant part of Article 5 as well as Article 6.3 of the SCM Agreement will be set out here below:

Article 5: Adverse Effects

> No Member should cause, through the use of any subsidy referred to in paragraphs 1 and 2 of Article 1, adverse effects to the interest of other Members, ie:
>
> (…)
> (c) serious prejudice to the interests of another Member.[13]
> (…)
>
> [13] The term 'serious prejudice to the interests of another Member' is used in this Agreement in the same sense as it is used in paragraph 1 of Article XVI of GATT 1994, and includes threat of serious prejudice.

Article 6: Serious Prejudice

> 6.3 Serious prejudice in the sense of paragraph (c) of Article 5 may arise in any case where one or several of the following apply:
>
> (a) the effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsidising Member;
> (b) the effect of the subsidy is to displace or impede the exports of a like product of another Member from a third country market;

(c) the effect of the subsidy is a significant price undercutting by the subsidized product as compared with the price of a like product of another Member in the same market or significant price suppression, price depression or lost sales in the same market;
(d) the effect of the subsidy is an increase in the world market share of the subsidizing Member in a particular subsidized primary product or commodity as compared to the average share it had during the previous period of three years and this increase follows a consistent trend over a period when subsidies have been granted.[254]

It is helpful to explain the meaning behind each of these effect-based phenomena prior to discussing the way in which they have been interpreted. First, Articles 6.3(a) and (b) provide that a subsidy has an adverse effect if it has the effect of displacing or impeding trade into the market of the subsidising Member or a third country market. Displacement relates to a situation where sales volume has declined from a set baseline, while impedance refers to a situation in which sales that otherwise would have occurred were impeded.[255] Article 6.3(c), on the other hand, provides that a subsidy has an adverse effect if it has the effect of a significant price undercutting, a significant price suppression, a price depression or lost sales as compared to the product of another Member competing in the same market.[256] For the purposes of Article 6.3(c), 'price suppression' refers to a situation where prices are either prevented or inhibited from rising—that is, they do not increase when they otherwise would have, or they do increase, but the increase is less than it otherwise would have been. 'Price depression', on the other hand, relates to a situation where prices are pressed down, or reduced.[257] Finally, under Article 6.3(d), a subsidy has an adverse effect if it increases the world market share of the subsidising Member with respect to primary products or commodities as compared to the average share it had during the previous three years and this trend has been consistent since subsidies were first initiated. The Panel in *US—Upland Cotton* held that the phrase 'world market share' in Article 6.3(d) 'refers to a share of the world market supplied by the subsidizing Member of the product concerned.'[258]

Article 6.3 is silent with respect to the procedure to be followed in order to make out a claim of serious prejudice.[259] Moreover, Article 6.3 does not use the word 'cause'. Nonetheless, the Panel in *US—Upland Cotton* interpreted the word 'effect' in Article 6.3(c) as meaning that a causal link must be established

[254] Footnote 17 to Article 6.3(d) is not necessary for the purposes of this chapter and has therefore been omitted.
[255] The Panel in *Indonesia—Autos* thus considered that 'the question before us is therefore whether the market share and sales data above would support a view that, but for the introduction of the subsidized Timor, sales of EC C Segment passenger cars would have been greater than they were'. Panel, *Indonesia—Autos* (n 243) [14.218].
[256] In *US—Upland Cotton,* the AB says that 'two products would be in the same market if they were engaged in actual or potential competition in that market' and there exists 'homogeneity of the conditions of competition' in a market: AB, *US—Upland Cotton* (n 245) [408]. In another case, the AB said that '[a]n assessment of the competitive relationship between products in the market is required in order to determine whether and to what extent one product may displace another': WTO, *European Communities and Certain Member States: Measures Affecting Trade in Large Civil Aircraft—Report of the Appellate Body* (18 May 2011) WT/DS316/AB/R (AB, *EC and certain member States—Large Civil Aircraft*) [1119].
[257] AB, *US—Upland Cotton* (n 245) [423], referring to Panel, *US—Upland Cotton* (n 242) [7.1277]. Also see Panel, *Korea—Commercial Vessels* (n 240) [7.533].
[258] Panel, *US—Upland Cotton* (n 242) [7.1464].
[259] WTO, *European Communities and Certain Member States: Measures Affecting Trade in Large Civil Aircraft—Report of the Panel* (30 June 2010) WT/DS316/R (Panel, *EC and certain member States—Large Civil Aircraft*) [7.1731].

between the subsidy and the significant price suppression.[260] This interpretation was confirmed by the AB,[261] which, quoting *US—Wheat Gluten* from the safeguards context, held that the causal threshold to be reached is one of a 'genuine and substantial relationship of cause and effect' between the subsidy and the market phenomenon.[262] Article 6.3 is silent with respect to how to establish a causal link between a subsidy and a market phenomenon.

The Panel in *US—Cotton* further held that determining 'the effect of the subsidy' within the meaning of Article 6.3(c) 'necessarily calls for an examination of United States subsidies, within the context of other possible causal factors, to ensure an appropriate attribution of causality'[263]—that is, a non-attribution analysis. The Panel in *US—Large Civil Aircraft (2nd complaint)* held that there is no requirement to perform the non-attribution analysis as a step that is separate from the causation analysis.[264] Instead, it is permissible to perform the non-attribution analysis at the same time as determining causation.[265] The AB in *US—Upland Cotton* upheld this approach.[266] The AB in *EC and certain member States—Large Civil Aircraft* confirmed that the same standard of causation and non-attribution that applied to Article 6.3(c) also applies to Article 6.3(a) and (b).[267] The AB in *US—Cotton* drew analogies between the Panel's approach and the non-attribution and causation requirements in the Safeguards and Antidumping agreements.[268] Specifically, the AB said that the procedures for determining non-attribution and causation cannot be 'automatically transposed' from the Safeguards and Antidumping agreements. Nonetheless, it said that 'they may suggest ways of assessing whether the effect of a subsidy is significant price suppression rather than it being the effect of other factors.'[269]

[3.0] The Unitary vis-à-vis the Bifurcated Process for Determining the Cause and Effect of a Market Phenomenon

Whilst the jurisprudence is consistent with respect to the need for a non-attribution and causation analysis, it diverges with respect to the process by which the cause and effect of a subsidy ought to be determined. Specifically, there is a cleavage in the jurisprudence regarding whether the cause and effect of a subsidy should be determined together in one step (the unitary approach) or in two steps (the bifurcated approach). Both approaches are essentially aimed at interrogating: (1) whether a particular market phenomenon exists

[260] Panel, *US—Upland Cotton* (n 242) [7.1343]–[7.1344]; Similarly, the Panel in *Korea—Commercial Vessels* held that 'we view these terms [price suppression or price depression] as implicitly including a certain built-in concept of causation': Panel, *Korea—Commercial Vessels* (n 240) [7.534].
[261] AB, *US—Upland Cotton* (n 245) [435].
[262] AB, *US—Upland Cotton* (n 245) [438] quoting AB, *US—Wheat Gluten* (n 12) [69].
[263] Panel, *US—Upland Cotton* (n 242) [7.1344].
[264] WTO, *United States: Measures Affecting Trade in Large Civil Aircraft (Second Complaint)—Report of the Panel* (31 March 2011) WT/DS353/R (Panel, *US—Large Civil Aircraft (Second complaint)*) [7.1660].
[265] ibid.
[266] AB, *US—Upland Cotton* (n 245) [437].
[267] AB, *EC and certain member States—Large Civil Aircraft* (n 249) [1232].
[268] AB, *US—Upland Cotton* (n 245) [438].
[269] ibid.

(eg, a decline in market share or the impedance of a Member's imports or exports of a competitive product into the market); and (2) whether the market phenomenon was the effect of a subsidy/ies or potentially confounding factors.

Under the 'unitary approach', the particular market phenomenon identified in the subparagraphs of Article 6.3 and the causal relationship between the market phenomenon and the challenged subsidies are both analysed together.[270] For example, an analysis of whether 'price suppression' has taken place is conducted at the same time as an analysis of what caused the price suppression. The unitary approach was used by the AB in *US—Upland Cotton*[271] and the Panel in *US—Upland Cotton (Article 21.5—Brazil)*.[272] In contrast, the bifurcated approach involves, first, an analysis of the market phenomenon and then an examination of the causal link between the potential causes and the market phenomenon.[273] The bifurcated approach was used by the Panel in *US—Upland Cotton*,[274] where the Panel considered: (1) whether there was price suppression in the world market for upland cotton and whether this price suppression was significant; and (2) whether a causal relationship existed between the significant price suppression and certain price-contingent subsidies.[275] The bifurcated approach may also be seen in the reasoning of the Panel in *EC and certain member States—Large Civil Aircraft*.[276]

The AB has indicated that the unitary approach is the preferred approach, saying that 'at least in respect of identifying price suppression and its causes [the unitary approach] has a sound conceptual foundation'.[277] The AB does not further elaborate on its basis for finding that the unitary approach has a 'sound conceptual foundation'. The unitary approach was used by the Panel in *Korea—Commercial Vessels*[278] and the AB in *US—Upland Cotton*[279], where they considered that the term 'suppression' contains some sort of inherent causation requirement. Moreover, these cases also reflect the belief that the factors that were necessary for a determination of the existence of price suppression were also relevant to the question of what caused the price suppression. In this sense, the very way in which they define the term 'suppression' suggests that it is impossible to separate the existence of such suppression from its cause. The AB in *US—Upland Cotton* held that:

> The ordinary meaning of the transitive verb 'suppress' implies the existence of a subject (the challenged subsidies) and an object (in this case, prices in the world market for upland cotton).

[270] AB, *EC and certain member States—Large Civil Aircraft* (n 249) [1107].
[271] AB, *US—Upland Cotton* (n 245) [433].
[272] WTO, *United States: Subsidies on Upland Cotton (Recourse to Article 21.5 of the DSU by Brazil)—Report of the Panel* (18 December 2007) WT/DS267/RW (Panel, *US—Upland Cotton (Article 21.5—Brazil)*) [10.46].
[273] AB, *EC and certain member States—Large Civil Aircraft* (n 249) [1107]. The AB in *US—Upland Cotton* said that they saw 'no legal error in this approach': AB, *US—Upland Cotton* (n 245) [431].
[274] Panel, *US—Upland Cotton* (n 242) [7.1275]–[7.1363].
[275] ibid [1275]–[1363].
[276] Panel, *EC and certain member States—Large Civil Aircraft* (n 249) [7.1731].
[277] WTO, *United States: Subsidies on Upland Cotton (Recourse to Article 21.5 of the DSU by Brazil)—Report of the Appellate Body* (2 June 2008) WT/DS267/AB/RW (AB, *US—Upland Cotton (Article 21.5—Brazil)*) [354].
[278] Panel, *Korea—Commercial Vessels* (n 240) [7.534].
[279] AB, *US—Upland Cotton* (n 245) [433].

> This suggests that it would be difficult to make a judgement on significant price *suppression* without taking into account the effect of the subsidies.[280]

The Panel in *Korea—Commercial Vessels* held that the text of Article 6.3(c) implies a *sine qua non* or 'but for' approach to causation in respect of price suppression/price depression.[281] The *sine qua non* test appears to go hand in hand with the unitary approach. The use of the *sine qua non* test in relation to Article 6.3(c) was repeated by the Panel in *US—Upland Cotton (Article 21.5—Brazil),* [282] which was upheld by the AB[283] as well as the Panel in *US—Large Civil Aircraft (Second complaint).*[284] The *sine qua non* test has also been used in the jurisprudence in relation to Article 6.3(a).[285] The AB in *US—Large Civil Aircraft (Second complaint)* held that the counterfactual reasoning may be either non-quantitative or quantitative, or a combination of the two, depending on the case at hand.[286] The suitability of the *sine qua non* test as the causal test to interrogate the link between subsidies and the market phenomenon will be evaluated in Section [6.0] below. This section will instead evaluate the suitability of the unitary approach to determining the cause of a phenomenon.

It is suggested that the unitary approach is fundamentally flawed as a methodology for interrogating the link between subsidies and a market phenomenon for two reasons. First, at the most basic conceptual level, the unitary approach involves identifying the effect of the subsidy (ie, the market phenomenon, such as price suppression) at the same time that it seeks to establish its cause (ie, the subsidies). In this sense, under the unitary approach, the nature of the effect of the subsidy is not fully established at the time that the fact-finder is seeking to understand its cause. To put this in symbolic terms, whilst causal tests generally ask, 'Did C cause E?', the unitary approach asks, 'What is E? And is it the effect of C?' This form of questioning represents a logical error in two respects. First, the unitary approach falsely assumes that an effect may be knowable *a priori* simply through analysing its cause. Second and relatedly, it is premised on the false assumption that cause and effect are not entirely distinct concepts. Again, this is a false assumption, since the one cause may produce a plurality of possible effects; and the effect is not knowable until it has been fully manifested. Indeed, Hume argued against this approach, as he said:

> The mind can never possibly find the effect in the supposed cause, by the most accurate scrutiny and examination. For the effect is totally different from the cause, and consequently can never be discovered in it. Motion in the second Billiard-ball is a quite distinct event from motion in the first; nor is there anything in the one to suggest the smallest hint of the other. (…) In a word, then, every effect is a distinct event from its cause. It could not, therefore, be discovered in the cause, and the first invention or conception of it, a priori, must be entirely arbitrary. And even after it is suggested, the conjunction of it with the cause must appear equally arbitrary, since there are always many other effects, which, to reason, must seem fully as consistent and natural.[287]

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[280] ibid.
[281] Panel, *Korea—Commercial Vessels* (n 240) [7.612].
[282] Panel, *US—Upland Cotton (Article 21.5—Brazil)* (n 265) [10.146].
[283] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [370].
[284] Panel, *US—Large Civil Aircraft (Second complaint)* (n 260) [7.1788], [7.1791] and [7.1794].
[285] Panel, *Indonesia—Autos* (n 243) [14.218].
[286] WTO, *United States: Measures Affecting Trade in Large Civil Aircraft (Second complaint)—Report of the Appellate Body* (12 March 2012) WT/DS353/AB/R (AB, *US—Large Civil Aircraft (Second complaint)*) [1019].
[287] Hume, *An Enquiry Concerning Human Understanding* (n 1) Section IV, Part I.

This quotation was taken from a larger passage in which Hume was observing the importance of experience in helping observers to make causal links between factors. Nonetheless, Hume's point about the impossibility of inferring an effect simply from examining its supposed cause remains relevant. It follows from Hume's point that the effect-based phenomenon (ie, the effect) must be identified *prior* to any analysis of its cause (ie, the subsidy/subsidies or the potentially confounding factors).

It also follows from the basic conceptual misunderstanding of causation that the unitary approach to causation results in circular reasoning. That is, the unitary approach requires a fact-finder to address the question of whether a market phenomenon is in existence before addressing 'the effect of the subsidy'. Essentially, then, this requires contending that a market phenomenon was brought about as a result of subsidies, and then using this conclusion to support a finding of causation between a subsidy and its effect. The United States made this point in its appellant's submissions in *US—Upland Cotton*.[288] It is suggested, therefore, that the unitary approach does not have the 'sound conceptual foundation'[289] asserted by the AB in *US—Upland Cotton (Article 21.5—Brazil)*.

The second reason that the unitary approach is flawed is that it does not allow for a genuine and rigorous non-attribution analysis to be undertaken. That is, it was seen above that the jurisprudence in respect of cases concerning serious prejudice requires that a non-attribution analysis be performed in order to ensure that any factors that played no causative role in bringing about a market phenomenon are excluded from the causation analysis.[290] The unitary approach, however, leaves no scope for conducting a rigorous non-attribution analysis. This is because the very method of defining the market phenomenon is dependent upon subsidies being the cause. To put it another way, the nature of the market phenomenon is defined in terms of the effect of subsidies. Accordingly, it becomes impossible to then decide in light of a non-attribution analysis that the subsidies played no causative role and that the market phenomenon was caused by some other mitigating factor—for example, a decline in world demand for that particular product instead. In this sense, there is no way to reconcile the unitary approach with a meaningful non-attribution analysis. It follows that it is difficult, in turn, to reconcile the unitary approach with statements made in the jurisprudence about the importance of conducting a non-attribution analysis.

In sum, the unitary approach is inappropriate for determining the cause and effect of a market phenomenon for the purposes of Article 6.3 of the SCM Agreement and should arguably be abandoned. It is suggested that the bifurcated approach is superior as it is the only approach that reflects a coherent vision of causation. This bifurcated approach should first identify the existence of the market phenomenon set out at Article 6.3; and then address, as a second step, whether there is a causal link between the subsidy/ies and the market phenomenon and that the link is not attenuated by potentially confounding factors. The rest of this

[288] United States' appellant's submission, para. 230 quoted in AB, *US—Upland Cotton* (n 245) [430].
[289] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [354].
[290] AB, *US—Upland Cotton* (n 245) [438]; Panel, *US—Upland Cotton* (n 242) [7.1344].

chapter is dedicated to considering the precise process by which this bifurcated process should be conducted.

[4.0] Determining the Nature of a Market Phenomenon

It has just been seen that, under the bifurcated model, the question of whether a particular market phenomenon has occurred is split into two separate questions—the first involves examining market data for evidence of a particular phenomenon; and the second involves assessing whether the particular phenomenon was brought about as a result of a subsidy/ies or potentially confounding factors. Section [5.0] will consider how causation and non-attribution analyses might be used to establish whether a subsidy should be held to be causally responsible for the market phenomenon. The present concern of this chapter is to consider the kinds of market phenomena that might be considered in relation to a finding of serious prejudice.

[4.1] Article 6.3(a) and (b): Displacement and Impedance

Article 6.3(a) of the SCM Agreement provides that one of the manifestations of serious prejudice is where 'the effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsidising Member'. The Panel in *Indonesia—Autos* found that 'displacement relates to a situation where sales volume has declined, while impedance relates to a situation where sales which otherwise would have occurred were impeded'.[291] The Panel in *EC and certain member States—Large Civil Aircraft* held that it generally agreed that 'this distinction between displacement and impedance is inherent in the ordinary meaning of the terms.'[292]

The Panel in *EC and certain member States—Large Civil Aircraft* said that there is nothing in the text of Article 6.3(a) or (b) that requires that evidence be brought in a particular form.[293] The jurisprudence has consistently examined market share data as a way of determining whether displacement or impedance has occurred.[294] In *EC and certain member States—Large Civil Aircraft*, the Panel found that market share data alone was sufficient to demonstrate displacement but not impedance.[295] The Panel in that case said that making out an impedance claim requires a Panel to be satisfied that sales that would otherwise have taken place were obstructed.[296]

In *EC and certain member States—Large Civil Aircraft*, the Panel said that, on the basis of the data presented, it was clear that Boeing's share of LCA deliveries to the EC market declined over the period in question,

[291] Panel, *Indonesia—Autos* (n 243) [14.218].
[292] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1738].
[293] ibid [7.1751].
[294] Panel, *Indonesia—Autos* (n 243) [14.211]; Panel, *Korea—Commercial Vessels* (n 240) [7.555]; and Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1739].
[295] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1739].
[296] ibid.

while EC's Airbus share of that market increased in the same period.[297] The Panel then found that the EC's subsidies enabled Airbus to develop and launch LCA as and when it did.[298] The Panel said that this alone was sufficient evidence to support a displacement claim but that the 'United States had failed to demonstrate that the effect of the subsidies in dispute was to impede United States' imports into the EC market, and United States' exports from the markets of certain third countries, during the period 2001–2006.'[299]

In sum, in order to make out a finding of displacement under Article 6.3(a) and (b), a Panel must consider: (1) whether the complainant's market share in a particular market has declined; and (2) whether such a decline was the effect of subsidies, as opposed to potentially confounding factors. In respect of impedance, on the other hand, a Panel must consider: (1) whether the market data shows that another Member's imports or exports of a like product have been impeded from entry into the market; and (2) whether such impeded entry was caused by the subsidy/ies (and not a potentially confounding factor).

[4.2] Article 6.3(c): Significant Price Suppression or Price Depression

The text of Part III of the SCM Agreement does not provide a definition or any interpretive guidance regarding the meaning of price suppression or price depression as those terms are used in Article 6.3(c).[300] Nonetheless, turning to price depression first, the Panel in *US—Upland Cotton* defined price depression as 'the situation where "prices" are pressed down, or reduced.'[301] The question of price depression was considered by the Panel in *EC and certain member States—Large Civil Aircraft*. In that case, the Panel looked at the market data presented to it which indicated that price depression had occurred in three of the four Boeing LCA models over the period 2001 to 2006.[302] On the basis of this data, the Panel made a finding of price depression.

Like price depression, price suppression is not defined in the SCM Agreement. Nonetheless, the Panel in *US—Cotton* defined 'price suppression' as a situation in which:

> "prices"—in terms of the "amount of money set for sale of upland cotton" or the "value or worth" of upland cotton—either are prevented or inhibited from rising (ie they do not increase when they otherwise would have) or they do actually increase, but the increase is less than it otherwise would have been.[303]

[297] ibid [7.1758].
[298] ibid [7.2025].
[299] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.2027].
[300] Panel, *US—Upland Cotton* (n 242) [7.1275] and Panel, *Korea—Commercial Vessels* (n 240) [7.533].
[301] Panel, *US—Upland Cotton* (n 242) [7.1277].
[302] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1854].
[303] Panel, *US—Upland Cotton* (n 242) [7.1276]. The Panel in *Korea—Commercial Vessels* (n 240) put it more simply when it said that "'price suppression" refers to the situation where prices have not increased when, or have increased less than, they otherwise would have': [7.533].

As the Panel found in *Korea—Commercial Vessels*, it is not difficult to establish that the price of a particular product has decreased, remained flat or increased only slightly.[304] It is much more difficult to demonstrate that prices should not have decreased or that they should have increased by more than they did.[305]

The AB in *US—Upland Cotton (Article 21.5)* elaborated on the differences between price suppression and price depression as follows:

> At a conceptual level, we see some differences between the concepts of 'price depression' and 'price suppression' as defined in the original proceedings. While price depression is a directly observable phenomenon, price suppression is not. Falling prices can be observed; by contrast, price suppression concerns whether prices are less than they would otherwise have been in consequence of various factors, in this case, the subsidies. The identification of price suppression, therefore, presupposes a comparison of an observable factual situation (prices) with a counterfactual situation (what prices would have been) where one has to determine whether, in the absence of the subsidies (or some other controlling phenomenon), prices would have increased or would have increased more than they actually did.[306]

This comparison between the observable world and a hypothetical world can be seen in the reasoning of the Panel in *EC and certain member States—Large Civil Aircraft*, which dealt with the question of whether price suppression had occurred, amongst other market phenomena. In that case, the Panel found that price suppression in world market prices for Boeing LCA had occurred in three out of the four Boeing LCA models between 2001 and 2006, based on a comparison of actual indexed prices with the United States Aircraft Manufacturers Producer Price Index.[307] In its reasoning, the Panel effectively compared the current success of Airbus LCA with a hypothetical world in which the Airbus LCA had not had subsidies. It concluded that the LA/MSF subsidies:

> shift[ed] a significant portion of the risk of launching an aircraft from the manufacturer to the governments supplying the funding (…) Based on our review of the development of successive models of Airbus LCA, we conclude that Airbus' ability to launch, develop, and introduce to the market, each of its LCA models was dependent on subsidised LCA/MSF.[308]

Despite this finding, the Panel nonetheless found that the subsidies had not actually caused the price suppression.[309]

The Panel's reasoning behind its failure to find price suppression is that, based on the evidence before it, it could not draw any firm conclusions as to whether price suppression had occurred. Specifically, the Stiglitz/Greenwald statement raised two possible hypothetical scenarios and the Panel did not know how to choose which of the two was more likely.[310] In other words, the Panel was experiencing the difficulties associated with resolving the 'hypothetical world problem'—a perennial problem associated with

[304] Panel, *Korea—Commercial Vessels* (n 240) [7.536].
[305] ibid.
[306] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [351].
[307] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1860].
[308] ibid [7.1949].
[309] ibid [7.2026].
[310] ibid [7.1995].

counterfactual analyses that was discussed in Chapter I[311] and which recurs throughout this thesis. Indeed, the *EC and certain member States—Large Civil Aircraft* Panel's finding above that the LA/MSF subsidies allowed Airbus to launch, develop and introduce to the market each of its LCA models is an example of it engaging in, and attempting to resolve, the 'hypothetical world problem'. In the case of determining 'price suppression' based on the Stiglitz/Greenwald statement, however, the Panel refrained from attempting to resolve the 'hypothetical world problem', with the end result that it declined to find that 'price suppression' had occurred at all.

To sum up, like a displacement finding in Article 6.3(a), price depression in Article 6.3(c) may be made out in absolute terms. Specifically, as the AB in *US—Upland Cotton (Article 21.5)* said, findings of price depression may be directly observed,[312] as may findings of displacement. To make a finding of price depression, therefore, a Panel must find: (1) that prices for a particular product are 'pressed down'; and (2) that such depression is the result of subsidies and not potentially confounding factors. A finding of price suppression in Article 6.3(c), on the other hand, involves determining: (1) whether the data indicates that prices are less than they would be if the subsidies were not in place; and (2) whether subsidies—as opposed to potentially confounding factors—are causally responsible for this suppression of prices. In making a determination as to price suppression, it seems difficult to avoid setting up a parallel hypothetical world in which subsidies did not occur with which to compare the real world. In this sense, the 'hypothetical world problem' would seem to be inextricably linked with a price suppression determination. The jurisprudence has tended to move straight from a comparison of the real world with a hypothetical world containing no subsidies to then making a determination as to price suppression. It is argued, however, that an intermediate non-attribution step is required in order to attempt to ensure that the data is not distorted by potentially confounding factors.

[5.0] Non-Attribution: The First Two Steps of the Tripartite Process

[5.1] Introduction

Under the bifurcated approach, once the market data is analysed, the second step in the process of determining whether a market phenomenon has occurred involves a causation and non-attribution analysis. It was seen in Section [2.0] above that the AB has said that the procedures for determining causation and non-attribution in the context of the Safeguards and Antidumping agreements might be used to 'suggest ways' of approaching the determination of serious prejudice in the context of the SCM Agreement. Nonetheless, the AB has not gone so far as explicitly to put forward the methodology for analysing causation and non-attribution that was laid down by the AB in *US—Wheat Gluten*—namely, what this thesis has called 'the Tripartite Non-Attribution/Causation Analysis'. It is contended, however, that the Tripartite

[311] Chapter I, Section [2.2] pages 12–14.
[312] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [351].

Non-Attribution/Causation Analysis offers the best methodology for analysing causation and non-attribution for the purposes of making a determination of serious prejudice under the SCM Agreement.

It is worth recalling that the Tripartite Non-Attribution/Causation Analysis involves three analytical steps.[313] These steps will be set out as follows, with each tailored to a finding of serious prejudice: (1) authorities must separate the injurious effects of subsidies vis-à-vis the injurious effects of potentially confounding factors; (2) authorities must then attribute to imports the harm they alone have produced before attributing to potentially confounding factors the harm that they have occasioned in turn; and (3) finally, authorities should determine whether there is a causal link between subsidies and a market phenomenon, leading to a finding of serious prejudice; and if so, whether such a causal link involves a 'genuine and substantial relationship of cause and effect' between these two elements.[314] The first two steps relate to the non-attribution limb, while the third step pertains to the causation analysis.[315]

The Panels and the AB have provided little guidance about the way in which a causal link should be drawn between a subsidy and a market distortion for the purposes of making a determination as to serious prejudice. The Panel in *US—Cotton* nonetheless held that the causal link must be a 'genuine and substantial relationship of cause and effect'.[316] To this extent, then, the same causal standard attaches to a finding of serious prejudice as is required for applying safeguards, antidumping measures and countervailing duties.

As the Tripartite Non-Attribution/Causation Analysis is somewhat abstract in nature, as in Chapter II, the worked hypothetical example of a Member's injured cotton industry will again be used throughout Sections [5.0] and [6.0] in order to make the discussion more applied. To that end, imagine that Member A has brought proceedings against Member B in the WTO because Member A alleges that the subsidies introduced by Member B to its cotton industry have caused Member A's cotton industry to suffer serious prejudice.

[5.2] The First Step of the Non-Attribution Process

It will be recalled that the first step of the non-attribution process involves identifying the *type* of injuries inflicted on the affected industry. Taking the example of the cotton industry, a fact-finder would be required to separate all of the injurious effects to the cotton industry into smaller sub-injurious effects. This chapter will call these 'sub-effects'. For the purposes of a serious prejudice determination, sub-effects to a cotton industry might include, for example: (1) displacement of imports of cotton within the meaning of Article 6.3(a); (2) displacement of exports of cotton within the meaning of Article 6.3(b); and (3) significant lost cotton sales within the meaning of Article 6.3(c) of the SCM Agreement. There may well be more sub-effects than those which have been identified here and in Figure 19. A representation of the separation of

[313] AB, *US—Wheat Gluten* (n 12) [69].
[314] ibid.
[315] ibid.
[316] AB, *US—Upland Cotton* (n 245) [438] quoting AB, *US—Wheat Gluten* (n 12) [69].

the sub-effects of subsidies can be seen in Step 1 of Figure 19. It is important to clarify that, whilst Figure 19 depicts each of the sub-effects of the subsidies as being of equal size spatially, in reality, each sub-effect might well be of greater or lesser significance to the ultimate finding of serious prejudice.

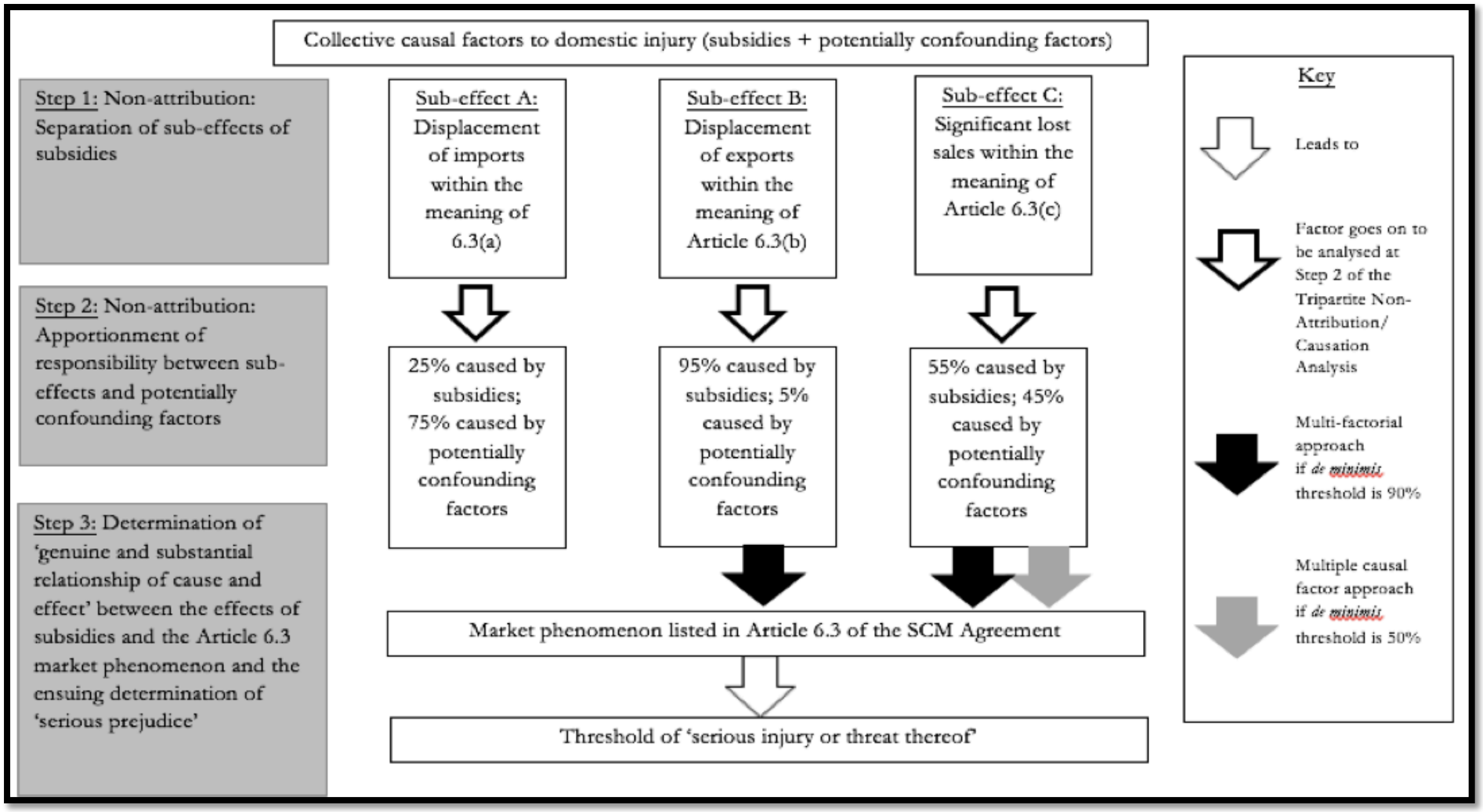

Figure 19: Overview of Steps 1, 2 and 3 of the Tripartite Non-Attribution/Causation Analysis: Causation and non-attribution analysis under Article 6.3 of the SCM Agreement

[5.3] The Second Step of the Non-Attribution Process

Introduction

The second step of the non-attribution process is essentially directed at determining whether the nominated sub-effects were caused by subsidies or potentially confounding factors and the respective quantitative contribution of each to the sub-effects. The AB has acknowledged that the sub-effects on a particular industry might be brought about by the 'interaction'[317] between subsidies and potentially confounding factors. Accordingly, it is possible that some sub-effects on an industry may have been caused by: (1) a combination of subsidies and potentially confounding factors; (2) exclusively subsidies; or (3) exclusively potentially confounding factors. Once the injurious sub-effects of the subsidies have been separated from the potentially confounding factors, it remains in the second step of the non-attribution process: (1) to apportion causal responsibility for the sub-effects between subsidies on the one hand and potentially confounding factors on the other; and (2) to determine which factors would qualify for inclusion in the final causation analysis. This section will first review the current approach in the jurisprudence to the disentanglement exercise before turning to argue that a quantitative approach is superior.

The current approach in the jurisprudence will be considered first. In *US—Upland Cotton*, the Panel examined the potentially confounding factors raised by the United States in order to make a determination as to whether it was likely that those potentially confounding factors attenuated or negated the causal link between the US' subsidies and a finding of price suppression under Article 6.3(c).[318] For example, the Panel in *US—Upland Cotton* looked at the following potentially confounding factors that were raised by the US after the Panel had established that there was a 'genuine and substantial causal link' between the US' mandatory price-contingent subsidies and price suppression: (1) softening demand for cotton;[319] (2) the United States' exchange rate adjustments which affect textile trade flows;[320] (3) the strong United States dollar since the mid-1990s;[321] (4) Chinese subsidies which have pushed down prices;[322] and (5) the effect of technological factors of upland cotton production.[323] The Panel concluded that:

> Although some of these factors may have contributed to lower, and even suppressed, world upland cotton prices during MY 1999–2002, they do not attenuate the genuine and substantial causal link that we have found between the United States mandatory price-contingent subsidies at issue and the significant price suppression. Nor do they reduce the effect of the mandatory price-contingent subsidies to a level which cannot be considered 'significant'.

The Panel's approach here is analogous to the 'breaking the causal link' approach discussed in Section [3.0] of Chapter II. That is, the Panel found causation as a preliminary step, and then considered whether any

[317] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [914] and [1206].
[318] Panel, *US—Upland Cotton* (n 242) [7.1357]–[7.1362].
[319] ibid [7.1358].
[320] ibid [7.1359].
[321] ibid [7.1360].
[322] ibid [7.1361].
[323] ibid [7.1362].

potentially confounding factors broke or attenuated that causal link. As was observed in Section [3.0] of Chapter II, the 'breaking the causal link' approach is flawed in the sense that it: (1) does not use the 'multi-factorial' approach; and (2) does not allow for the fact that subsidies and potentially confounding factors might interact in the creation of injury. The AB upheld the conclusions of the Panel in *US—Upland Cotton*.[324] This is despite the fact that neither the Panel nor the AB had made clear what processes, if any, the Panel had undertaken to satisfy itself that the potentially confounding factors had not attenuated the causal link between subsidies and their effects.

The Panel in *Korea—Commercial Vessels* said that it would follow the approach taken by the Panel in *US—Cotton*, calling it 'logical and appropriate'.[325] The Panel in *Korea—Commercial Vessels* found that it would:

> bear in mind the need to take into account the effects of identified factors other than the subsidies, to determine whether such factors would attenuate any affirmative causal link that we may find, or render insignificant any price suppression or price depression effect of the subsidy that we may find.[326]

Again, this approach is essentially the 'breaking the causal link' approach. This approach is at odds with the guidance of the AB in *US—Large Civil Aircraft (Second complaint),* which said that it was not sufficient for a Panel simply to say that it had taken into account potentially mitigating factors in its causation analysis.[327] Instead, the AB held that a Panel must make an attempt to understand and take into account the interactions between the subsidies at issue and the various potentially confounding factors, as well as their relative contributions to the alleged market phenomenon.[328] It would seem, then, that the kind of approach taken by the Panel in *US—Cotton* would not satisfy the requirement of considering the interactions between subsidies and potentially confounding factors. Nonetheless, neither the AB nor any subsequent Panel have used any clear methodology for attempting to understand the interactions between subsidies and potentially confounding factors. Given the difficulty of conducting non-attribution, it is suggested that the second step of the Tripartite Non-Attribution/Causation Analysis used in Chapter II can assist in providing much-needed guidance as to how to conduct the non-attribution stage of the analysis.

It may be recalled that the second step of the Tripartite Non-Attribution/Causation Analysis involves analysing whether an injurious effect that is necessary to the ultimate finding of a market phenomenon listed in Article 6.3 and the ensuing serious prejudice was caused by subsidies and/or potentially confounding factors. This has been called the 'Apportionment Analysis'. In the context of a serious prejudice analysis, it is suggested that the Apportionment Analysis ought to have three stages: (1) the amalgamation of the sub-effects of multiple subsidies where necessary; (2) the 'identification of potentially confounding factors stage', which involves identifying the potentially confounding factors that may have

[324] AB, *US—Upland Cotton* (n 245) [496].
[325] Panel, *Korea—Commercial Vessels* (n 240) [7.618].
[326] ibid.
[327] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1206].
[328] ibid.

contributed to the finding of serious prejudice; and (3) the 'Disentanglement stage', which involves disentangling the sub-effects brought about by subsidies from the sub-effects brought about by those potentially confounding factors. It may be observed that this chapter has suggested that an additional first stage to the Apportionment Analysis be included. That is, the idea of amalgamating sub-effects or sub-injuries was not raised in the context of Chapter II. This additional stage takes account of the fact that sometimes subsidies are not independently sufficient to amount to a sub-effect, but when aggregated with other subsidies, they may become sufficient to do so.

Once the sub-effects of the subsidies have been disentangled from the sub-effects of potentially confounding factors, the next step involves analysing the respective quantitative contributions of subsidies to producing those effects vis-à-vis potentially confounding factors. As with Chapter II, this stage involves a process of apportioning responsibility for the identified sub-effects between the subsidies on the one hand and the potentially confounding factors on the other hand. Once the Apportionment Analysis is complete, the next question is whether a specific sub-effect on the injured industry is sufficiently attributable to subsidies alone that it can pass the non-attribution limb and qualify for final analysis under the third step. As in Chapter II, this second causation test will be called the 'Qualification Analysis'. This section now turns to give a more detailed examination of the Apportionment Analysis.

1. Apportionment Analysis

(a) Amalgamation of the Sub-Effects of Multiple Subsidies

The non-attribution process may involve combining the effects of multiple subsidies to form a single sub-effect, where it is necessary to do so. The question of whether the effects of subsidies might be aggregated first arose in *US—Upland Cotton,* where the Panel considered whether a Panel must 'clinically isolate' each individual subsidy and its sub-effects, or whether a number of sub-effects might be aggregated.[329] The Panel decided that it believed that, for the purposes of Article 6.3(c), to the extent that 'a sufficient nexus with [prices and products] exists among the subsidies at issue so that the [sub-]effects manifest themselves collectively, we believe that we may legitimately treat them as a "subsidy" and group them and their [sub-] effects together.'[330] The Panel in *EC and certain member States—Large Civil Aircraft* determined that the possibility of considering subsidies and their sub-effects together for the purposes of making out a finding of serious prejudice also extends to Articles 6.3(a) and (b) of the SCM Agreement.[331] The AB in *US—Large Civil Aircraft (Second complaint)* explained that the danger of a Panel unduly separating each sub-effect of a subsidy is that it will find that 'no subsidy is a substantial cause of the relevant adverse effects.'[332] It is important to note that in some cases the AB already amalgamates the sub-effects of subsidies through the

[329] Panel, *US—Upland Cotton* (n 242) [7.1192].
[330] ibid.
[331] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1960].
[332] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1284].

processes of aggregation and cumulation. The methods of aggregation and cumulation might, therefore, be harnessed for the purposes of amalgamating the sub-effects of multiple subsidies.

In deciding whether to combine the injurious sub-effects of subsidies, a Panel must consider such matters as the design, structure, magnitude, and operation of the subsidy, as well as the nexus between the subsidy and the subsidised product.[333] Collecting subsidies that have a similar design, structure and operation is at once an acknowledgement that similar measures are likely to produce the same sub-effects, as well as a tool of efficiency, in the sense that such amalgamation means that a Panel does not need to repeat the same analysis for each subsidy.[334] As with the causation and non-attribution analyses, the AB has found that a Panel has a certain amount of discretion as to the methodology that can be used to analyse the collective sub-effects of multiple subsidies for the purposes of assessing causation.[335] The question of whether subsidies and their sub-effects can be grouped together is one that must be answered in light of the particular facts and circumstances of the case at hand.[336] There may be cases where such a grouping together is inappropriate, in which case, there is no requirement that it be done.

The AB has explained the method of aggregation as follows:

> A Panel may group together subsidy measures that are sufficiently similar in their design, structure, and operation in order to ascertain their aggregated [sub-]effects in an integrated causation analysis and determine whether there is a genuine and substantial causal relationship between these multiple subsidies, taken together, and the relevant market phenomena identified in Article 6.3 of the *SCM Agreement* (…) In such circumstances, the Panel is not required to find that each subsidy measure is, individually, a genuine and substantial cause of the relevant phenomenon. Nor is it required to assess the relative contribution of each subsidy within the group to the resulting effects. When such an analysis is appropriate in the light of the design, structure, and operation of multiple subsidies, a Panel may also add together the *amounts* of the subsidies as part of its analysis of the collective [sub-]effects of that group of subsidies. Whether such an analysis is appropriate will depend upon the particular features of the subsidies at issue and the case presented by the complainant. The causal mechanism through which a subsidy produces [sub-]effects is one criterion that will be relevant to the issue of whether aggregation is appropriate in any given instance.[337]

Returning to the case study of the cotton industry, aggregation might be used, for instance, in a case where Member B has introduced a number of subsidies into its cotton industry and this has resulted in diverse sub-effects to Member A's cotton industry. So, for example, imagine that Member B has implemented a suite of measures to benefit its cotton industry, including: tax reductions to cotton producers, sales tax abatements on sales of cotton, reduced prices for cotton pickers and harvesters and a one-off payment of £5 million to Member B's local research centre for research and development of cotton production methods. Member A might argue: (1) the tax reductions to cotton producers and sales tax abatements on

[333] ibid [1292].
[334] ibid [1291].
[335] ibid [1284].
[336] ibid [1319].
[337] ibid [1285].

sales of cotton, when aggregated, resulted in significant lost cotton sales within the meaning of Article 6.3(c); and (2) the reduced prices for cotton pickers and harvesters and the one-off payment of £5 million to Member B's local research centre for research and development of cotton production methods, when aggregated, resulted in displacement of imports of cotton within the meaning of Article 6.3(a). The aggregation model is represented diagrammatically in Figure 20 below. Again, it is worth noting that, while each subsidy and each sub-effect is represented diagrammatically as being of equal size, in reality the size of the subsidies and effects may vary considerably. This aggregation model was used by the Panel in *US—Upland Cotton*, where the Panel held that, to the extent that there are interrelationships among the subsidies and 'their [sub-]effects manifest themselves collectively', those subsidies should be considered together.[338] In this way, the aggregation approach might be used to combine the injurious sub-effects of subsidies for the purposes of fulfilling the first step of the non-attribution process.

[338] Panel, *US—Upland Cotton* (n 242) [1286].

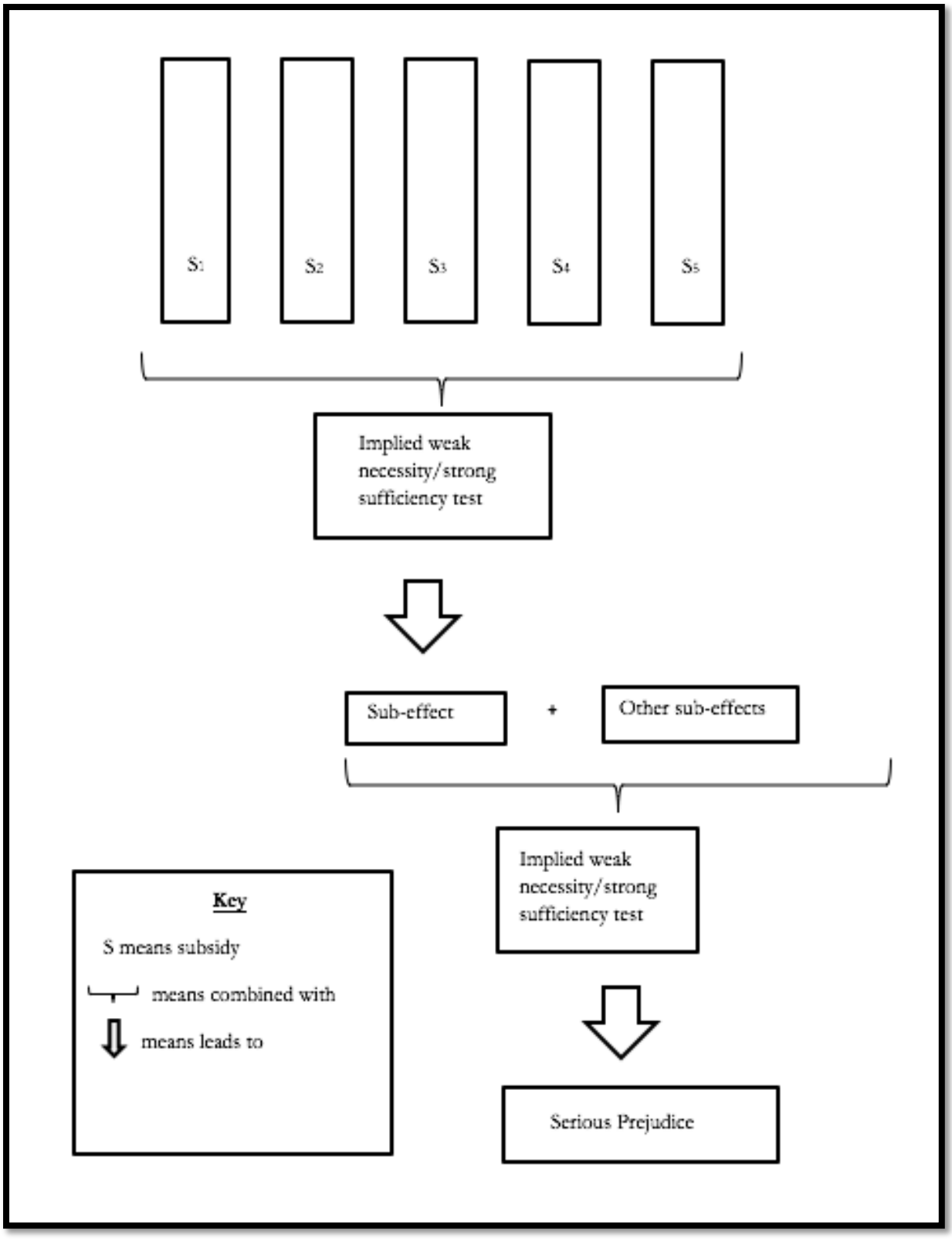

Figure 20: Representation of aggregation

The method of cumulation is the inverse of aggregation. The AB described the process of cumulation as follows:

> A Panel may begin by analyzing the [sub-]effects of a single subsidy, or an aggregated group of subsidies, in order to determine whether it constitutes a genuine and substantial cause of adverse effects. Having reached that conclusion, a Panel may then assess whether other subsidies—either individually or in aggregated groups—have a genuine causal connection to the same [sub-]effects, and complement and supplement the [sub-]effects of the first subsidy (or group of subsidies) that was found, alone, to be a genuine and substantial cause of the alleged market phenomena. The other subsidies have to be a 'genuine' cause, but they need not, in themselves, amount to a 'substantial' cause in order for their [sub-]effects to be combined with those of the first subsidy or group of subsidies that, alone, has been found to be a genuine and substantial cause of the adverse effects.[339]

In order to demonstrate the method of cumulation, this chapter will revert back to the example of Member A's cotton industry. Under the cumulation method, a fact-finder would cumulate all of the sub-effects of Member B's subsidy/ies and then make a determination as to whether their cumulative effect constitutes a genuine and substantial cause of adverse effects. So, for example, a fact-finder would cumulate: (1) displacement of imports of cotton within the meaning of Article 6.3(a); (2) displacement of exports of cotton within the meaning of Article 6.3(b); and (3) significant lost cotton sales within the meaning of Article 6.3(c) of the SCM Agreement. Based on this cumulation, a fact-finder would then weigh these sub-effects in order to decide whether they, together, constitute a genuine and substantial cause of adverse effects. The cumulation model is represented diagrammatically in Figure 21 below. Again, it is worth noting that, while each sub-effect is represented diagrammatically as being of equal size, in reality the size of each sub-effect may vary considerably. In its adverse effects analysis, the Panel in *EC and certain member States—Large Civil Aircraft*, considered the combined sub-effects of the LA/MSF subsidies and the non-LA/MSF subsidies, and found that the latter 'complemented and supplemented' the former in causing, inter alia, serious prejudice under Article 6.3(a), (b) and (c).[340]

[339] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1287].
[340] Panel, *EC and certain member States—Large Civil Aircraft* (n 269) [7.1959]–[7.1960].

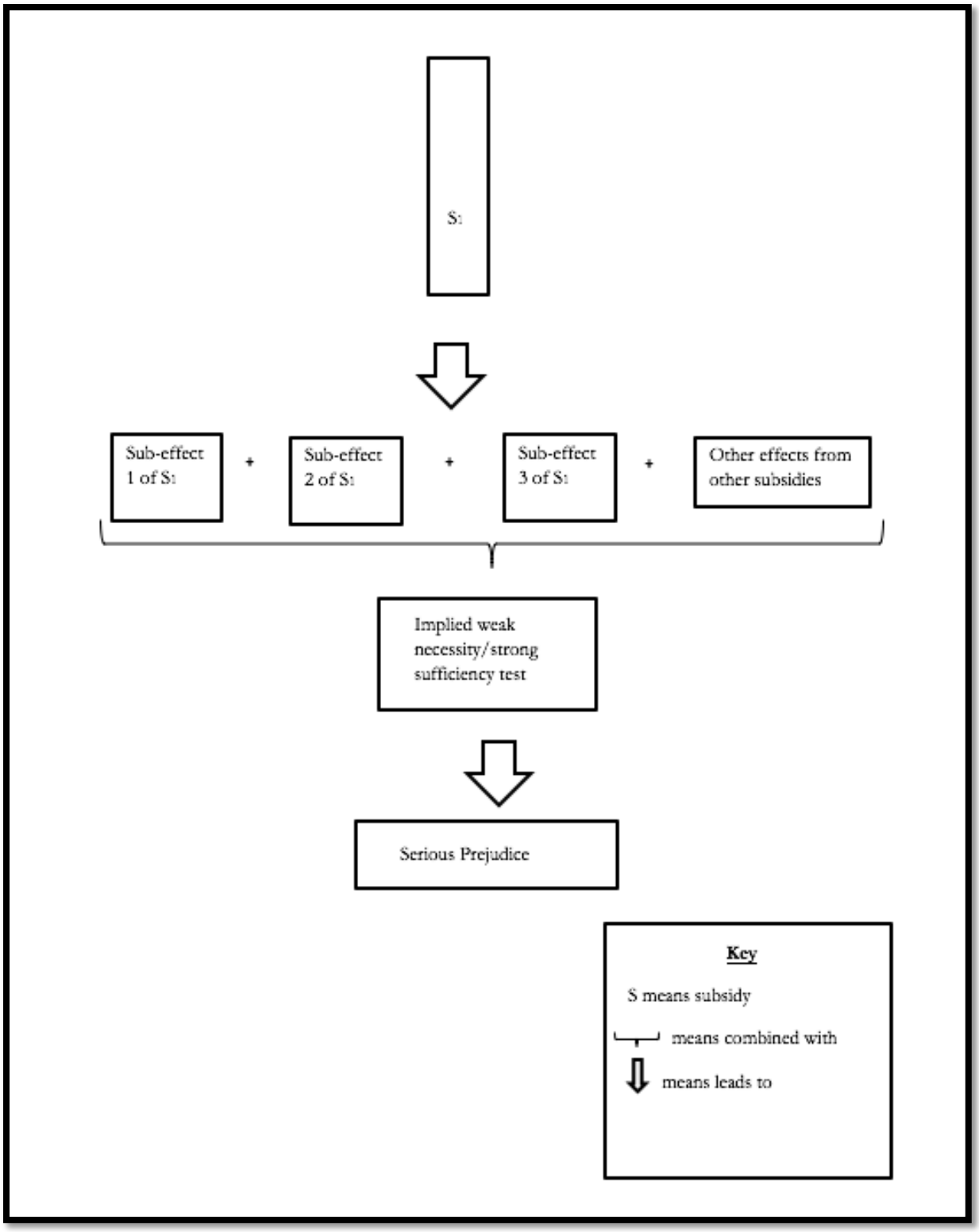

Figure 21: Representation of cumulation

At present, the analysis in the jurisprudence performs a logical leap from grouping together the sub-effects of subsidies through the methods of cumulation and aggregation to then making a determination as to whether the subsidies have caused the market phenomenon and the resulting serious prejudice. This tendency can be seen diagrammatically in Figures 20 (page 104) and 21 (page 106). The difficulty with this current approach is that it is premised on the assumption that a market phenomenon and the ensuing serious prejudice to the industry is caused solely by the effects of subsidies. In this sense, this approach does not allow for a genuine non-attribution analysis to be undertaken. This means, in turn, that if the methods of cumulation and aggregation are used, there is no possibility for a fact-finder to find that the market phenomenon and the ensuing serious prejudice was, in fact, caused by a potentially confounding factor, as opposed to the effects of a subsidy. Accordingly, it is suggested that the current aggregation and cumulation methods may be incorporated into the first step of the Tripartite Non-Attribution/Causation Analysis; but they are only one part of the process in developing a serious prejudice determination, which must also include a non-attribution analysis.

(b) Identification of Potentially Confounding Factors Stage

As in the Safeguards and Antidumping context, the process of non-attribution in the SCM context first involves identifying what the potentially confounding factors are. In the safeguards context, the domestic competent authority must satisfy itself that all the potentially confounding factors have been identified. In the context of making a serious prejudice determination, the Panel does not need to identify any potentially confounding factors. This is because any potentially confounding factors are identified and raised by the Member whose subsidies have allegedly caused harm. Accordingly, the Panel can simply adjudicate the matter based on those potentially confounding factors that are brought before it. Due to this fundamental difference, it is not necessary to set out the process of identifying potentially confounding factors in the context of serious prejudice, as it was in the context of safeguards in Chapter II.

(c) Disentanglement Stage

There is nothing explicit in the text of the SCM Agreement or the jurisprudence to indicate that the non-attribution analysis should be performed by reference to the quantitative features of the subsidies or the potentially confounding factors. In fact, the Panel and AB in *US—Cotton* explicitly held that a serious prejudice analysis does not require a subsidy to be quantified.[341] None of the Panels or the AB have sought to use a quantitative approach for performing the non-attribution analysis. Nonetheless, the AB in *US—Large Civil Aircraft (Second complaint)* held that:

> When confronted with multiple factors that may have contributed to the alleged adverse effects, a Panel must seek to understand the interactions between the subsidies at issue and the various other

[341] Panel, *US—Upland Cotton* (n 242) [7.1171] and AB, *US—Upland Cotton* (n 245) [467].

> factors, and make some assessment of their connection to, as well as the relative contribution of the subsidies and the other factors in bringing about, the relevant effect.[342]

It seems difficult to know how a Panel could assess the 'interaction' and 'the relative contribution' of the subsidies vis-à-vis the potentially confounding factors in any meaningful way without some form of quantitative analysis. Unless such quantitative analysis were used, it would seem that any attempt to set out 'the relative contribution' of the subsidies and the potentially confounding factors would be so approximate as not to be useful.

Given that the Panel and the AB have not found that a quantitative approach should be used to perform the non-attribution analysis, it is not surprising that there has been no commentary from economists as to how any potential non-attribution analysis should be performed. Despite this lacuna, it is suggested that the basic conceptual similarities between the non-attribution analyses in the safeguards, antidumping and CVDs contexts and those in the serious prejudice context are such that future Panels and the AB will be well-served by appropriating the econometric approaches used in the context of the former.[343] Alternatively, Article 13.2 of the DSU enables Panels to establish 'expert review groups'. Such a group could be convened and tasked with adapting the econometric approaches used to conduct non-attribution in the safeguards and antidumping contexts to the non-attribution analysis required in order to conduct serious prejudice.[344] Indeed, Sapir and Trachtman have argued that an 'expert review group' formed under Article 13.2 of the DSU would be 'well-designed for use in cases where the Panel must make complex economic determinations'.[345] As with the non-attribution analyses under the safeguards and antidumping agreements, the purpose of the non-attribution analysis for a finding of serious prejudice is to apportion responsibility between subsidies and potentially confounding factors in percentage terms. Once the responsibility for subsidies vis-à-vis potentially confounding factors has been apportioned, the Panel and the AB may then progress to the Qualification Analysis.

2. Qualification Analysis

The aim of the Qualification Analysis is to determine whether a specific injurious effect is sufficiently attributable to subsidies alone that it can pass the non-attribution limb and qualify for final causation analysis under Step 3. In order to perform the Qualification Analysis, it must be known whether only those effects that have been brought about by subsidies alone qualify for inclusion in the causation analysis, or whether those effects that have been brought about by a combination of subsidies and potentially

[342] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1206].
[343] In particular, see Prusa and Sharp (n 16) 77; and Durling and McCullough (n 181) 80; Kelly (n 16); Irwin (n 16); and Ahn and Moon (n 16) 1041–47.
[344] Sapir and Trachtman say that an 'expert review group' formed under Article 13.2 of the DSU would be 'well-designed for use in cases where the Panel must make complex economic determinations': Sapir and Trachtman, (n 17) 206.
[345] ibid.

confounding factors might also be included. In other words, the question is whether the 'multi-factorial approach' might be used or whether only subsidies can qualify for inclusion in the causation analysis.

On this point, Sapir and Trachtman say that 'the better answer' is that serious prejudice must be the result of subsidies alone.[346] There are two reasons that Sapir and Trachtman provide for this 'better answer'. The first is economic in nature—namely:

> The 'prejudice' is not injury—it is impairment of the right to a market undistorted by subsidies. Even if it is permissible that injury (or more properly, 'prejudice') that is not serious without supplementation by other causal factors can be the basis for a safeguards action, it seems impermissible that price suppression that is not significant without supplementation by other causal factors could be actionable as serious prejudice.[347]

The second reason is textual—that is, they note that the language of Article 6.3(c) provides that 'the effect of the subsidy' must be 'significant price suppression'. *Prima facie,* Sapir and Trachtman's arguments are sound and compelling, and at a purely theoretical level, they do seem to put forward the 'better answer'.

In practice, however, their argument potentially overestimates the extent to which the effect of subsidies can be clinically separated from the effect of potentially confounding factors. That is, some of the cases indicate that the effects of both interact with each other. For example, in the *Large Civil Aircraft (Second complaint)* case, the United States argued that the bulk of the research that led to the development and launch of the 787 was self-funded by Boeing, whereas the amount of research funded by NASA was relatively small.[348] It is difficult to balkanise that research which was self-funded from that which was funded by NASA, since research tends to build on previous research in a cumulative fasion. In a case such as this one, then, it becomes particularly difficult to disentangle the effects of subsidies and potentially confounding factors. The AB appears to have recognised this when it said:

> As part of its assessment of the causal nexus between the subsidy at issue and the effect(s) that it is alleged to have had, a Panel must seek to understand the interactions between that subsidy and the various other causal factors, and make an assessment of their connections to, as well as the relative importance of the subsidy, and of the other factors, in bringing about, the relevant effect(s). In order to find that the subsidy is a genuine and substantial cause, a Panel need not determine [a subsidy] to be the *sole* cause of that effect, or even that it is the *only* substantial cause of that effect. A Panel must, however, take care to ensure that it does not attribute the effects of those other causal factors to the subsidies at issue, and that the other causal factors do not dilute the causal link between those subsidies and the alleged adverse effects such that it is not possible to characterize that link as a genuine and substantial relationship of cause and effect.[349]

The AB's statement here would seem to suggest that those effects that are produced by a combination of subsidies and potentially confounding factors may be included in the final causation stage of the analysis. Indeed, the AB's statement here is strikingly similar to its statement in *US—Wheat* Gluten, when it put

[346] Sapir and Trachtman (n 17) 186.
[347] ibid 186.
[348] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [982].
[349] ibid [984] (emphasis original). See also [914].

forward the 'multi-factorial approach'.[350] This view seems to be the more practical one in light of the difficulty of separating the effects of subsidies from the effects of potentially confounding factors.

In sum, the statement by the AB in *US—Large Civil Aircraft (Second Complaint)* appears to support the 'multi-factorial approach'. As in Chapter II, it is difficult to translate the AB's statement into a precise quantitative breakdown between subsidies and potentially confounding factors. That is, would an effect caused by 90% subsidies and 10% potentially confounding factors be included in the causation analysis in the third step? What about an effect caused by 80% subsidies and 20% potentially confounding factors? Sapir and Trachtman are correct to point out that a serious prejudice finding would seem to demand less tolerance for potentially confounding factors than an injury finding in the case of, say, safeguards.[351] As such, it would seem logical that the percentage threshold for subsidies was very high—say, in the order of 90%. That said, instead of prescribing a rigid quantitative breakdown between subsidies and potentially confounding factors, it would seem logical in the case of serious prejudice to allow some degree of flexibility depending on the case at hand. In particular, in cases where there is a particularly high degree of interaction between the effects of subsidies and potentially confounding factors (such as was the case in *US—Large Civil Aircraft (Second Complaint)*), the percentage threshold for the effects of subsidies would be lower than in cases where there is less interaction.

It has already been seen that the AB in *US—Large Civil Aircraft (Second complaint)* found that it is not necessary for a market phenomenon listed in Article 6.3 and the ensuing serious prejudice determination to have been brought about by 100% subsidies. In other words, the 'multi-factorial approach' applies to the Qualification Analysis, which means that those injurious effects that are brought about by a combination of subsidies and potentially confounding factors may possibly still qualify for inclusion in the causation analysis in Step 3 of the Tripartite Non-Attribution/Causation Analysis. As in the safeguards, antidumping and countervailing duties contexts discussed in Chapter II, it will be up to a Panel or the AB to specify the *de minimis* threshold for the inclusion of injurious effects in the Qualification Analysis. If, for example, the *de minimis* threshold for the inclusion of injurious effects is 90%, then those injurious effects caused by 90% subsidies and 10% potentially confounding factors will qualify for inclusion in the final causation analysis. This can be seen at Effect A in Figure 19 at page 97. Injurious effects that are caused by, say, 70% subsidies and 30% potentially confounding factors, would be excluded from the causation analysis in the tertiary stage of the Tripartite Non-Attribution/Causation Analysis. Self-evidently, the lower the *de minimis* threshold is set, the more injurious effects would qualify for inclusion in the causation analysis and the easier it would be, in turn, to find a causal link between subsidies and 'serious injury or threat thereof'. It

[350] AB, *US—Wheat Gluten* (n 12) [67]: 'the language in the first sentence of Article 4.2(b) does *not* suggest that increased imports be *the sole* cause of the serious injury, or that "*other* factors" causing injury must be excluded from the determination of serious injury.'
[351] Sapir and Trachtman (n 17) 186.

remains now to consider the process of drawing that causal link for the purposes of the tertiary stage of the Tripartite Non-Attribution/Causation Analysis.

[6.0] Causation: The Third Step of the Tripartite Process

The AB has said that the Panel is entitled to a certain amount of methodological discretion in the way in which it analyses causation between subsidies and the particular market phenomenon in question.[352] The only guidance is that, as in relation to safeguards, antidumping measures and countervailing duties, the causal link must involve a 'genuine and substantial relationship of cause and effect'.[353] This section will first look at the way in which the causal link between subsidies and the market phenomenon listed in Article 6.3 and the ensuing serious prejudice determination is currently drawn in the jurisprudence before turning to propose an alternative approach.

The Panel in *Korea—Commercial Vessels* said that the causation analysis must be done on a case-by-case basis and be tailored to the particular circumstances of each individual dispute.[354] Nonetheless, all of the cases considering serious prejudice to date have used some form of counterfactual analysis in determining whether a causal link exists between subsidies and a market phenomenon. The first case, *US—Upland Cotton*, does not explicitly use the *sine qua non* test as such, but the Panel does say that 'the effect of the subsidies was to allow United States producers to sell upland cotton at a price lower than would otherwise have been necessary to cover their total costs.'[355] This is effectively a *sine qua non* test, in that it is still comparing the effect of the subsidies with a hypothetical world in which the subsidies do not exist. The AB in *US—Upland Cotton* makes this very point:

> The Panel's definition of price suppression (…) includes the notion that prices 'do not increase when they *otherwise* would have' or 'they do actually increase, but the increase is less than it *otherwise* would have been'. The word 'otherwise' in this context refers to the hypothetical situation in which the challenged subsidies are absent.[356]

The *sine qua non* test was used more explicitly as the basis of the causal link by the Panels in *US—Upland Cotton (Article 21.5—Brazil)*,[357] *Korea—Commercial Vessels*,[358] *Indonesia—Autos*,[359] *US—Large Civil Aircraft*[360] and the *US—Large Civil Aircraft (Second complaint)*.[361] The AB in *US—Large Civil Aircraft*[362] and *US—Large*

[352] AB, *US—Upland Cotton* (n 245) [436]–[437]; AB, *US—Large Civil Aircraft (Second complaint*) (n 279) [1284].
[353] AB, *US—Upland Cotton* (n 245) [438] quoting AB, *US—Wheat Gluten* (n 12) [69].
[354] Panel, *Korea—Commercial Vessels* (n 240) [7.619].
[355] Panel, *US—Upland Cotton* (n 242) [7.1353].
[356] AB, *US—Upland Cotton* (n 245) [433] (emphasis original; footnotes omitted).
[357] [281].
[358] [7.537].
[359] Panel, *Indonesia—Autos* (n 243) [14.218].
[360] [7.1920], [7.1939], [7.1940], [7.1948], [7.1956], [7.1976], [7.1985], [7.1986], [7.1989], [7.1993], [7.2025] and [7.2154].
[361] [7.1788], [7.1791] and [7.1794].
[362] [1229]–[1300].

Civil Aircraft (Second complaint)[363] upheld the use of the counterfactual approach. Sapir and Trachtman, too, advocate the use of the *sine qua non* test in this context.[364]

It is suggested that the *sine qua non* test or any counterfactual test is inappropriate as a causal test for interrogating the causal link between subsidies and market phenomena for a number of reasons. Indeed, even some of the Panels and the AB have expressed some reservations about the utility of the *sine qua non* test in making a determination as to whether there is a 'genuine and substantial relationship of cause and effect' between a subsidy and the particular market phenomena in question. These reservations go to the heart of the criticisms made about the *sine qua non* test more generally.[365] That is, the AB remarked that the *sine qua non* test may find certain factors to be causal that are necessary, but ultimately remote, from the final outcome.[366] For example, the AB in *US—Upland Cotton (Article 21.5)* acknowledged that '[a] subsidy may be necessary, but not sufficient, to bring about price suppression.'[367] Similarly, the AB in *EC and certain member States—Large Civil Aircraft* remarked on this possibility, holding that 'there are circumstances in which a "but for" approach does not suffice', observing that the *sine qua non* test may attribute causation to factors that are technically necessary but very remote.[368] This insight is very important. It shows the danger of relying on a non-quantitative causal test that lacks a sufficiency criterion—which is a criticism of the *sine qua non* test that was raised in Chapter I.[369]

One of the ramifications of using a *sine qua non* test in this context is that the test is likely to generate a 'false positive' result—that is, to find that a subsidy or subsidies are the cause of the particular effect-based phenomena, even when they may have only played a minor role. This defect could be mitigated if the Panels and the AB repeated the *sine qua non* test with respect to each and every one of the potentially confounding factors that were raised. That is, the fact-finder would ask, 'But for this particular potentially confounding factor, would the market phenomenon have occurred?' in respect of each and every potentially confounding factor. The difficulty with this approach is, however, that the *sine qua non* test might return affirmative results in relation to a series of potentially confounding factors as well as subsidies. It would follow from this that the fact-finder would then have no way of adjudicating which of those factors was actually *sufficient* to have caused the market phenomenon if they relied on the *sine qua non* test alone. In sum, use of the *sine qua non* test would have the potential to result in a fact-finder drawing a causal link between a subsidy or subsidies and a market phenomenon in cases where the causal contribution of that subsidy to the market phenomenon was actually marginal.

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[363] [1019] and [1182]–[1274].
[364] Sapir and Trachtman (n 17) 201.
[365] These criticisms were set out Chapter I at Section [3.2] of under the heading, 'Criticisms of the Sine Qua Non Test'. See pages 15–18.
[366] See, eg, AB, *EC and certain member States—Large Civil Aircraft* (n 249) [1233].
[367] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [374].
[368] [1233].
[369] See Chapter I, Section [3.2] under the heading, 'Criticisms of the Sine Qua Non Test'. See pages 15–18.

A second difficulty with the *sine qua non* test may be seen in a remark made by the AB in *EC and certain member States—Large Civil Aircraft*. In that case, the AB commented that:

> The use of a counterfactual analysis provides an adjudicator with a useful analytical framework to isolate and properly identify the effects of the challenged subsidies. In general terms, the counterfactual analysis entails comparing the actual market situation that is before the adjudicator with the market situation that would have existed in the absence of the challenged subsidies. This requires the adjudicator to undertake a modelling exercise as to what the market would look like in the absence of the subsidies.[370]

Whilst the AB does not raise this feature in a critical way, it is suggested that undertaking a 'modelling exercise' raises the same difficulty as has been seen in other contexts throughout this thesis—namely, the 'hypothetical world problem'. That is, whilst the AB in *EC and certain member States—Large Civil Aircraft* said that the use of the *sine qua non* test in this context 'requires the adjudicator to undertake a modelling exercise as to what the market would look like in the absence of the subsidies,'[371] it did not provide any clear sense of the way in which such a 'modelling exercise' should be performed. Even within the same case, the difficulty of creating these models is made clear, as the AB reviews four possible scenarios that the Panel had considered as to what the LCA industry would have looked like in the absence of the challenged subsidies.[372] The fact that there are four possible hypothetical scenarios underlines the degree to which the position of the LCA industry in the absence of the challenged subsidies is unknowable. Most of the subsidies only provide one hypothetical world as an alternative to the actual world—but in fact this world is as unknowable as each of the four hypothetical worlds in the *EC and certain member States—Large Civil Aircraft* case. It is important to emphasise that the position of an industry in the absence of subsidies is, in fact, unknowable with any precision. Therefore, the hypothetical world with which the actual world is compared is, in fact, nothing more than a 'guesstimate'.

Finally, and most fundamentally, it is argued that the *sine qua non* test is rendered pointless where a proper non-attribution analysis is conducted. That is, the very *raison d'être* of a non-attribution analysis in this context is to consider the interaction between subsidies and potentially confounding factors and assess whether the market phenomenon is actually the result of a potentially confounding factor, rather than a subsidy. The *sine qua non* test is unable to accommodate any interactions between subsidies and potentially confounding factors. Indeed, the incompatibility between the *sine qua non* test and a non-attribution analysis can be seen in the jurisprudence. For example, in *Korea—Commercial Vessels*, after having undertaken a *sine qua non* test to determine whether subsidies had caused price suppression or price depression under Article 6.3(c), the Panel then turned to perform a non-attribution analysis. The Panel found that it would 'bear in mind the need to take into account the effects of identified factors other than the subsidies, to determine whether such factors would attenuate any affirmative causal link that we may find, or render insignificant

[370] AB, *EC and certain member States—Large Civil Aircraft* (n 249) [1110].
[371] ibid.
[372] ibid [1261].

any price suppression or price depression effect of the subsidy that we may find.'[373] It is suggested that, not only is this a very methodologically questionable approach to conducting the non-attribution analysis, but it is also at odds with subsequent jurisprudence. That is, the AB remarked five years after the *Korea—Commercial Vessels* decision that it is not sufficient for a Panel simply to say that it had taken into account potentially mitigating factors in its causation analysis.[374] The implication of this is that the non-attribution analysis must be more rigorous than simply 'bear[ing] in mind' other potentially mitigating factors. Instead, it would seem that a fuller inquiry must be had as to the nature of the potentially mitigating factors and how they interact with the subsidy or subsidies.

Use of the *sine qua non* test becomes even more illogical where a fact-finder uses the Tripartite Non-Attribution/Causation Analysis. This is because, as has been seen above, under the Tripartite Non-Attribution/Causation Analysis, only those subsidies and potentially confounding factors that have passed the *de minimis* threshold at the Qualification Analysis stage will qualify for the causation analysis in the third step. The very fact that the subsidies and potentially confounding factors have passed the qualification stage means that they *must* be necessary. Accordingly, use of the *sine qua non* test—which only contains a necessity criterion—becomes redundant, as every single factor and subsidy that is interrogated at that stage must, *ipso facto*, pass the *sine qua non* test.

Given these fundamental drawbacks to the use of the *sine qua non* test, some of which have even been acknowledged by the AB, it is suggested that an alternative causal test should be used. Steinberg and Josling put forward regression analysis of the subsidy and trade data as well as simulation of the effect of subsidies by models as the best methods for finding causation between subsidies and the market phenomenon.[375] Steinberg and Josling, writing their article in 2003, were not able to take account of the fact that the subsequent jurisprudence would require that a non-attribution analysis be performed alongside the causation analysis. Accordingly, the difficulty with their regression analysis and their proposal to simulate the effects of subsidies through the use of models is that it assumes that subsidies are responsible for the market phenomenon, without allowing for a non-attribution analysis. A second difficulty with the regression analysis and simulation of the effect of subsidies by models is that these methods require more data with respect to the effect of subsidies than is normally available.[376]

It is contended, not only that the weak necessity/strong sufficiency test provides a viable alternative to the *sine qua non* test and the econometric models proposed by Steinberg and Josling, but also that the Panels and the AB have unwittingly been using an implied version of a weak necessity/strong sufficiency test in their use of aggregation and cumulation analyses already. That is, it is suggested that the aggregation and cumulation models that involve grouping subsidies and their effects together actually implicitly rely on a

[373] Panel, *Korea—Commercial Vessels* (n 240) [7.618].
[374] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1206].
[375] See generally, Steinberg and Josling (n 17).
[376] Sapir and Trachtman (n 17) 201.

weak necessity/strong sufficiency model of causation. The fact that the Panels and AB have already developed some kind of variant of the weak necessity/strong sufficiency model is strongly suggestive of its suitability in this context.

Turning first to the aggregation model, it is worth recalling that the aggregation model groups together subsidies that collectively produce the same effect. It is implicit in the aggregation model that each subsidy is a necessary element of a sufficient set to produce the relevant effect. This can be seen diagrammatically in Figure 20 at page 103. Moreover, the finding of serious prejudice can only take place where the effect is then combined with other effects that are collectively sufficient to reach the threshold of serious prejudice. In sum, there are two weak necessity/strong sufficiency tests implied in the aggregation model. Again, this idea can be seen diagrammatically in Figure 20 at page 103.

Conversely, turning to the cumulation model, it may be recalled that the cumulation model separates out the diverse sub-effects of the one subsidy. Once the effects have been identified and separated, a weak necessity/strong sufficiency test is impliedly used in order to determine whether the effects might collectively be sufficient to result in a finding of serious prejudice. This can be seen diagrammatically in Figure 21 at page 105. In sum, the aggregation and cumulation models are premised on the idea that the adverse effect would not have been identified except by grouping together a number of subsidies that would otherwise be independently insufficient to cause the adverse effect. This is confirmed by a statement made by the AB in *US—Large Civil Aircraft (Second complaint)*, where the AB said that there is a risk that, by unduly separating each adverse effect of a subsidy, a Panel will find that 'no subsidy is a substantial cause of the relevant adverse effects.'[377]

Even where the methods of aggregation and cumulation are not used, a weak necessity/strong sufficiency test should still be used to make out causation between subsidies and serious prejudice. This is because the ultimate question should be whether those factors (subsidies and potentially confounding factors) that have qualified for the causation stage are sufficient to reach the causal threshold of 'genuine and substantial relationship of cause and effect'. If the Tripartite Non-Attribution/Causation Analysis is not used, then a Panel will need to adjudicate whether subsidies and/or 'other potential casual factors' were sufficient to have caused injury based on non-quantitative features. It is unclear how this might be done in any meaningful way.

It is instead suggested that the Tripartite Non-Attribution/Causation Analysis is the better approach to making a determination as to causation, as it involves making a quantitative assessment of the relative contributions of the subsidies vis-à-vis the potentially confounding factors. Once this is performed, only those factors that pass above the *de minimis* threshold can qualify for the causation stage. Accordingly, at the causation step, it is simply the role of the fact-finder to look at each of the factors that have qualified

[377] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [1284].

for the causation stage and ask whether each is necessary to a set of factors that is collectively sufficient to cause the market phenomenon (and serious prejudice, in turn).

To illustrate by returning to the case study of the cotton industry, at the third stage of the Tripartite Non-Attribution/Causation Analysis, the fact-finder would group together all of the sub-effects that were sufficiently attributable to subsidies that they passed the Qualification Analysis. So, turning to Figure 19 at page 97, if the *de minimis* threshold were 90%, a fact-finder would include Sub-Effect B in the causation analysis. The fact-finder would then use the weak necessity/strong sufficiency test to determine whether the sub-effects, once collected together, were sufficiently significant to indicate that there is a 'genuine and substantial relationship of cause and effect' between the subsidies and the market phenomenon in Article 6.3 and the concomitant serious prejudice.

It has already been seen that the required causal threshold between subsidies and a finding of serious prejudice is a 'genuine and substantial relationship of cause and effect'. It is unclear from the jurisprudence whether there is any difference between a finding of a causal link between subsidies and serious prejudice and a finding of a 'genuine and substantial relationship of cause and effect' between the subsidies and serious prejudice. The jurisprudence does not make clear what this difference is, if any, nor does it define the phrase. The closest that the AB has come to defining it is in *US—Large Civil Aircraft (Second complaint)*, where the AB held:

> The subsidy at issue may be found to exhibit the requisite causal link notwithstanding the existence of other causes that contribute to producing the relevant market phenomena if, having given proper consideration to all other relevant contributing factors and their effects, the Panel is satisfied that the contribution of the subsidy has been demonstrated to rise to that of a genuine and substantial cause.[378]

In sum, the jurisprudence seems to use the phrase 'causal link' and 'genuine relationship of cause and effect' interchangeably,[379] which seems to suggest that once causation has been made out, such a causal link is, for all intents and purposes, a 'genuine and substantial relationship of cause and effect'.

[7.0] Conclusion

A finding of serious prejudice under Article 6.3 of the SCM Agreement has some similarities with an injury determination under the trade remedy agreements. Most obviously, both a serious prejudice finding and a finding of injury under the trade remedy agreements require causation and non-attribution analyses to be performed. As was seen in Chapter II, the causation and non-attribution analyses are particularly difficult because they require a fact-finder to make a determination as to which factors are causative at the same

[378] AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [914].
[379] See, eg, AB, *EC and certain member States—Large Civil Aircraft* (n 249) [451], [1234]; Panel, *US—Large Civil Aircraft (Second complaint)* (n 260) [7.1662]; AB, *US—Large Civil Aircraft (Second complaint)* (n 279) [120], [914], [1206], [1284], [1307] and [1308]; Panel, *US—Upland Cotton* (n 242) [7.1363]; and AB, *US—Upland Cotton* (n 245) [421].

time that they require a fact-finder to exclude non-causative factors. Moreover, the causal standard required to find serious prejudice is the same as under the trade remedy agreements—namely, a 'genuine and substantial relationship of cause and effect'.[380] The text of Article 6.3, however, provides far less detail as to how the causation and non-attribution analyses should be performed than the text of the trade remedy agreements concerned with injury. This lack of detail in the text of Article 6.3 has given the Panel and the AB an even greater number of interpretative choices than in respect of the injury provisions in the trade remedy agreements.

One such interpretative choice is whether the causal relationship between the subsidy/ies and the market phenomenon ought to be drawn in one step (the unitary approach) or two steps (the bifurcated approach). Whilst the AB has indicated that the unitary approach is the preferred approach and that it has 'a sound conceptual foundation',[381] this chapter has argued in favour of the bifurcated approach instead. This is because the bifurcated approach supports a more coherent view of causation. It is also the only approach that would allow for a genuine non-attribution analysis to be conducted. A second interpretive choice that has dominated this chapter is the method of conducting a non-attribution analysis. It has been seen that the Panels and AB are yet to develop a coherent and consistent methodology for separating subsidies from potentially confounding factors. Indeed, it has been seen that some of the jurisprudence has used the 'breaking the causal link' approach, which does not truly interrogate the interaction between subsidies and potentially confounding factors. This chapter has argued that the Tripartite Non-Attribution/Causation Analysis is the best means for performing the required causation and non-attribution analyses. Finally, another interpretive choice with which the jurisprudence must grapple relates to the causation test for determining the causal link between subsidies and the market phenomenon and the resulting serious prejudice. It has been seen that the jurisprudence has overwhelmingly preferred a counterfactual analysis for determining the causal link. This chapter has contended, however, that a weak necessity/strong sufficiency test is superior in this context. Moreover, those cases that use cumulation and aggregation to amass subsidies or their sub-effects already unwittingly rely on an implicit weak necessity/strong sufficiency test, which serves to affirm its suitability here.

Finally, it is important to consider the policy implications of performing a genuine non-attribution analysis in the context of a serious prejudice analysis. The fact that the Tripartite Non-Attribution/Causation Analysis provides a way of performing a genuine non-attribution analysis means that those sub-effects that were more the result of potentially confounding factors than subsidies will not falsely be attributed with causal responsibility. As a result, this genuine non-attribution analysis will mean that less sub-effects will go on to be considered at the causation stage as compared to a tokenistic non-attribution analysis. If there are fewer sub-effects under consideration at the causation stage of the analysis, it follows that it will be more difficult to draw a causal link between a subsidy/subsidies and the market phenomenon (and ensuing

[380] AB, *US—Upland Cotton* (n 245) [438] quoting AB, *US—Wheat Gluten* (n 12) [69].
[381] AB, *US—Upland Cotton (Article 21.5—Brazil)* (n 270) [354].

serious prejudice finding). From a policy perspective, it follows, in turn, that a genuine non-attribution analysis, such as that which the Tripartite Non-Attribution/Causation Analysis affords, means that a serious prejudice determination will be more difficult to make out than if a tokenistic form of non-attribution is performed. This being the case, a genuine non-attribution analysis will mean that Member B is less likely to be able to demonstrate that Member A's subsidies are actionable. This means, in turn, that if Member B is less likely to find Member A's subsidies are actionable, then Member B is also less likely to be able to bring countervailing duties against Member A. From an economic perspective, some have argued that countervailing duties do 'more harm than good' and that global welfare would be improved if countervailing duties were reduced in number or even eliminated.[382]

At the heart of each of the interpretive choices that this chapter has advocated for is an insistence upon thinking through the consequences of having a genuine non-attribution analysis. That is, whilst the jurisprudence has consistently insisted that a non-attribution analysis must be undertaken, it has been seen that some of its analytical approaches are fundamentally at odds with a thorough non-attribution analysis. First, its unitary approach, with its focus on the effects of subsidies alone, does not allow for a true non-attribution analysis because the unitary analysis does not give any scope for the potential role of potentially confounding factors. Second, the 'breaking the causal link' approach, which has been used in some of the jurisprudence, does not allow for a non-attribution analysis that interrogates the interaction between subsidies and potentially confounding factors. Moreover, in respect of the causation analysis, it was seen above that the use of a counterfactual test to determine the causal link between a subsidy/ies and a market phenomenon actually makes no sense where a genuine non-attribution analysis has been undertaken. This is because, if a true non-attribution analysis is conducted, all factors that have not been excluded by such an analysis would, *ipso facto*, be necessary. Accordingly, use of a causal test that relies on a necessity criterion is redundant. The overriding contribution of this chapter to the determination of causation with respect to serious prejudice, then, is to put forward a means by which a true non-attribution analysis might be undertaken and to argue in favour of those interpretive choices that must logically follow from it.

[382] Alan O Sykes, 'The Economics of WTO Rules on Subsidies and Countervailing Measures' (2003) University of Chicago John M Olin Law and Economics Working Paper No. 186, 1.

Chapter IV:
General Exceptions

[1.0] Introduction

The ability of Members to regulate for non-trade purposes is one of the most important issues in WTO law. Both Article XX of the *General Agreement on Tariffs and Trade* (GATT 1994) and Article XIV of the *General Agreement on Trade in Services* (GATS) (collectively, 'the General Exceptions') set out conditional exceptions to the disciplines of the GATT 1994 and the GATS. To avail itself of an exception, a Member must satisfy two analytical limbs—namely, that: (1) its measure may be prima facie exempted under one or more of the subparagraphs of the General Exceptions; and (2) the measure also fulfils the requirements of the introductory clause or 'chapeau' of the General Exceptions.[383] This second analytical limb is beyond the scope of this chapter. The rationale underlying the General Exceptions is that the importance of the policy objectives set out in those provisions outweighs the importance of the trade values embedded in the disciplines of the GATT 1994 and the GATS.[384]

The AB must consider a number of factors when making a determination as to whether a measure satisfies the first analytical limb. One of the most critical of these is the level of contribution that a measure must make to the realisation of its intended policy objective.[385] It is this question that forms the central preoccupation of this chapter. In particular, this chapter is principally concerned with the way in which a

[383] The idea of approaching the analysis of the General Exceptions in this two-tiered manner has been called into question by a recent journal article: see Lorand Bartels, 'The Chapeau of the General Exceptions in the WTO GATT and GATS Agreements: A Reconstruction' (2015) 109(1) AJIL 105. A discussion of this approach is beyond the scope of this chapter.

[384] See WTO, *United States: Import Prohibition of Certain Shrimp and Shrimp Products—Report of the Appellate Body* (12 October 1998) WT/DS58/AB/R (AB, *US—Shrimp*) [121].

[385] The level of contribution that a measure makes to the realisation of its intended policy objective is an important factor to consider in relation to seeking exemption under each of the subparagraphs of the General Exceptions. The AB in *Korea—Various Measures on Beef* held that a determination of whether a measure is 'necessary' for the purposes of the General Exceptions involves 'weighing and balancing' a series of factors, including: (1) the contribution of a measure to a policy objective; (2) the relative importance of the policy objective; and (3) the trade-restrictiveness of the challenged measure ('WAB test'): WTO, *Korea: Measures Affecting Imports of Fresh, Chilled and Frozen Beef—Report of the Appellate Body* (11 December 2000) WT/DS161/R and WT/DS169/R (AB, *Korea—Various Measures on Beef*) [162]–[164]; and WTO, *Colombia: Measures Relating to the Importation of Textiles, Apparel and Footwear—Report of the Appellate Body* (7 June 2016) WT/DS461/AB/R [5.71]–[5.73] and [5.77]. Moreover, the contribution of a measure towards realising a policy objective is also important in relation to Article XX(g), where measures must be 'primarily aimed at' or have a 'direct connection' with the policy objective: WTO, *United States: Standards for Reformulated and Conventional Gasoline—Report of the Panel* (29 January 1996) WT/DS2/R (Panel, *US—Gasoline*) [6.40]; WTO, *United States: Standards for Reformulated and Conventional Gasoline—Report of the Appellate Body* (29 April 1996) WT/DS2/AB/R (AB, *US—Gasoline*) p 19. Finally, in relation to Article XX(j), the same 'WAB test' required in relation to those subparagraphs containing the word 'necessary' must also be undertaken in relation to measures seeking exemption under Article XX(j): WTO, *India: Certain Measures Relating to Solar Cells and Solar Modules—Report of the Appellate Body* (24 February 2016) WT/DS456/R (AB, *India—Solar Cells*) [5.63]. It seems that the threshold for contribution must be higher under Article XX(j) than that which is expected under subparagraphs containing the word 'necessary': AB, *India—Solar Cells* (n 378) [5.62].

fact-finder can demonstrate that a measure made a causal contribution to a policy objective. In this sense, this chapter is concerned with the concept of causation for its *explanatory* power—that is, to see if a measure led to the state of affairs (or policy outcome) it intended. This use of causation is different to the attributive use discussed in Chapters II, III and V.

It will be argued that the relationship between a measure and its intended policy objective is impliedly a causal relationship. Indeed, this idea has been argued by a number of Members in the jurisprudence; and even the Panel in *Dominican Republic—Import and Sale of Cigarettes* referred to the link between a measure and its policy objective as a 'causal link'. Nonetheless, despite the Panel's apparent acknowledgement of the role of causation in this relationship, the Panel and AB have so far refused to follow-up this insight with the use of causal tests that interrogate causation. Moreover, whilst the AB has said that both quantitative and non-quantitative factors might be used to assist with determining the causal contribution of a measure,[386] in reality, they have never relied on quantitative data to assist with making such a determination. In fact, Panels and the AB have resisted using real-world data about the effects of a measure to assist in their determination of whether a measure made a causal contribution to a policy objective. Instead, the Panel and AB have tended to analyse the properties of the measure itself and attempt to infer causation from those properties. It is suggested that this approach fundamentally misunderstands the nature of causation. This methodology is even more unjustifiable in cases where the effects of a measure will not manifest themselves until the future.

The contribution of this chapter, then, is to set out the implications that must follow from regarding the relationship between a measure and its policy objective as causal. To that end, it will be suggested that Panels and the AB must draw on real-world data detailing the effects of a measure, since causation cannot be determined in the absence of an analysis of the effects of a measure. In cases where the effects of a measure do not materialise until the future, this chapter will set out some quantitative approaches that might be used to predict future effects based on past data. To this extent, in this context causation is used for its *predictive* potential—namely, trying to infer the future contribution of a condition to a future state of affairs. Again, this differs from the attributive use of causation discussed in Chapters II, III and V. Where such data is collected, the effects may well be the result of a combination of the measure as well as potentially confounding factors. Accordingly, it is important that a non-attribution and causation analysis is undertaken; and, to this end, the Tripartite Non-Attribution/Causation Analysis may be applied in this context.

[386] WTO, *European Communities: Measures Prohibiting the Importation and Marketing of Seal Products—Report of the Appellate Body* (22 May 2014) WT/DS400/AB/R and WT/DS401/AB/R (AB, *EC—Seal Products*) [5.215]; and WTO, *Brazil: Measures Affecting Imports of Retreaded Tyres—Report of the Appellate Body* (3 December 2007) WT/DS332/AB/R (AB, *Brazil—Retreaded Tyres*) [146].

[2.0] Jurisprudence Concerning the Relationship between a Measure and its Policy Objective under the General Exceptions

[2.1] The Relationship between a Measure and a Policy Objective as Causal in Nature

The relationship between a measure and its intended policy objective may not appear, at first sight, to be a causal relationship. Indeed, so far, it has not been expressly treated as such by the Panel or the AB, in the sense that they have never interrogated the relationship using formal causal tests. Nonetheless, the idea that a measure must causally contribute to a policy objective may easily be implied. Indeed, Korea raised this idea in *Korea—Various Measures on Beef*,[387] in which Korea argued that there was an 'uninterrupted causal link' between the separation of its sales outlets and the objective of complying with laws or regulations that are not inconsistent with the GATT 1994.[388] Neither the Panel in that case nor the AB, however, addressed Korea's causation argument. Despite omitting explicitly to consider this relationship as causal, two Panels have referred to the link between a measure and its policy objective as a 'causal link'. First, the Panel in *Colombia—Ports of Entry*, in relation to Article XX(d), referred to a causal link between a measure and a policy objective, opining that, '[t]he Panel therefore finds that there is no correlation, much less causal link, demonstrated between implicit prices and the ports of entry measure.'[389] Similarly, the Panel in *Dominican Republic—Import and Sale of Cigarettes* said:

> Even assuming *arguendo* that Exhibit DR-8 contains evidence that forgery of tax stamps may occur, the Panel finds no supporting evidence in Exhibits DR-8 and DR-29 to the Dominican Republic's assertion that there is a causal link between allowing stamps to be affixed abroad and the forgery of tax stamps. The fact that two events may occur simultaneously (affixation of tax stamps and forgery of tax stamps) does not necessarily imply that those two events are correlated, much less that they are causally linked.[390]

[387] WTO, *Korea: Measures Affecting Imports of Fresh, Chilled and Frozen Beef—Report of the Panel* (31 July 2000) WT/DS161/R; WT/DS169/R (Panel, *Korea—Various Measures on Beef*) [254].
[388] ibid.
[389] WTO, *Colombia: Indicative Prices and Restrictions on Ports of Entry—Report of the Panel* (27 April 2009) WT/DS366/R [7.581].
[390] WTO, *Dominican Republic: Measures Affecting the Importation and Internal Sale of Cigarettes—Report of the Panel* (26 November 2004) WT/DS302/R [7.226].

Moreover, it is notable that the words 'link',[391] 'connection'[392], 'nexus'[393] and 'relationship'[394] continually recur in the jurisprudence when describing the association between a measure and the achievement of its policy objective for the purposes of the General Exceptions. In this sense, on the one hand, the Panels and the AB appear to acknowledge the relationship to be a causal one, but on the other hand, they have so far failed to follow this up by interrogating the relationship using formal causal tests. Accordingly, there is a disconnect between the Panels and AB's recognition of the relationship as causal and the method by which they have interrogated the nature of that causal relationship.

Instead of using traditional causal tests, the Panels and the AB have expressly resisted laying down a methodology to assess the contribution of a measure to its policy objective.[395] The AB has held on several occasions that a determination as to the effectiveness of a measure may be made using both 'qualitative' and quantitative evidence.[396] To date, all of the relevant Panels and the AB have relied on so-called 'qualitative' evidence in making the determination. It is difficult to know, in practice, what the AB means by 'qualitative' evidence—except that it is non-quantitative. A number of cases have assessed the contribution of a measure to the policy objective by examining the 'design and structure' of the measure.[397]

It is by no means clear what the 'design and structure' of a measure means, nor how it assists in determining the contribution of a measure to achieving a policy objective. For example, to take the analogy of subsidies or trade remedies, it would be nonsensical to attempt to interrogate the causal contribution of a subsidy or import to injuring another Member simply by looking at the 'design and structure' of that particular subsidy or import with no regard to its effects. This is not to say that qualitative or non-quantitative features cannot be used effectively to interrogate causation; but rather, that those features would need to relate to the qualities of necessity or sufficiency. Instead, the 'design and structure' test requires that a fact-finder interrogate causation by looking at the features of the alleged *cause*, instead of looking at the features of the

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[391] Panel, *US—Gasoline* (n 378) [6.39]; WTO, *Brazil: Measures Affecting Imports of Retreaded Tyres—Report of the Panel* (12 June 2007) WT/DS332/R (Panel, *Brazil—Retreaded Tyres*) [7.45] and [7.132]; WTO, *European Communities: Measures Prohibiting the Importation and Marketing of Seal Products—Report of the Panel* (25 November 2013) WT/DS400/R WT/DS401/R (Panel, *EC—Seal Products*) [7.485]; WTO, *China: Measures Affecting Trade Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products—Report of the Appellate Body* (21 December 2009) WT/DS363/AB/R (AB, *China—Publications and Audiovisual Products*) [233]; WTO, *China: Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum—Report of the Appellate Body* (7 August 2014) WT/DS/AB431/AB/R; WT/DS/432/AB/R; WT/DS433/AB/R (AB, *China—Rare Earths*) [7.290].

[392] AB, *US—Gasoline* (n 378) [17]–[18].

[393] AB, *US—Shrimp* (n 377) [133]; WTO, *United States: Measures Affecting the Cross-Border Supply of Gambling and Betting Services—Report of the Appellate Body* (7 April 2005) WT/DS285/AB/R [292] cited with approval in AB, *EC—Seal Products* (n 379) [5.169]; WTO, *China: Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products—Report of the Panel* (12 August 2009) WT/DS363/R (Panel, *China—Publications and Audiovisual Products*) [4.319]; AB, *China—Rare Earths* (n 384) [5.112].

[394] AB, *US—Gasoline* (n 378) [19]; AB, *US—Gasoline* (n 378) [17]–[18]; WTO, *United States: Import Prohibition of Certain Shrimp and Shrimp Products—Report of the Panel* (15 May 1998) WT/DS58/R [7.119]; Panel, *Brazil—Retreaded Tyres* (n 384) [7.119]; AB, *US—Shrimp* (n 377) [136].

[395] AB, *Brazil—Retreaded Tyres* (n 379) [145]. This was recalled with approval by the AB in *EC—Seal Products* (n 379) [5.210].

[396] AB, *Brazil—Retreaded Tyres* (n 379) [146]; AB, *EC—Seal Products* (n 379) [5.215].

[397] AB, *US—Shrimp* (n 377) [138]; WTO, *Argentina: Measures Affecting the Export of Bovine Hides and the Import of Finished Leather—Report of the Panel* (19 December 2000) WT/DS155/R [11.303].

causal link. In other words, the 'design and structure' test aims to determine causation simply by looking at the properties of C, with no regard to the nature of E.

The Assumption that an Effect May Be Knowable A Priori

The 'design and structure' test involves the same logical fallacy that was discussed in Chapter III—namely, falsely assuming that an effect may be knowable *a priori* simply by examining the nature of the cause. As was observed in Chapter III, a cause and an effect are separate phenomena, and the former in and of itself can never be used to predict the latter. Chapter III excerpted an extended quotation from David Hume to the effect that '[t]he mind can never possibly find the effect in the supposed cause (…)'.[398] Hume's critique of deriving an effect simply by examining the cause is just as applicable here. In sum, a Panel or the AB are no more capable of deriving a causal link between a measure and its policy objective through the process of examining the 'design and structure' of a measure than Hume was of predicting the motion of the second billiard-ball simply from examining the movement of the first. It surely follows from this that the 'design and structure' test, or indeed any other non-quantitative test that involves looking at the nature of the measure alone, cannot be relied upon accurately to interrogate causation and should be abandoned.

The impossibility of accurately predicting the effect of a measure on a policy objective without actually quantifying the effects is reflected in the non-quantitative descriptors that Panels and the AB have given to describe the level of contribution of a measure to a policy objective. They have variously held that a measure: made 'a material contribution',[399] 'contributed to a certain extent',[400] contributed 'at least to some extent',[401] or was 'capable of making a contribution'.[402] It is difficult to know whether the discrepancy between these labels is significant, and if so, in what way. One of the implications of failing to interrogate causation using quantitative tests, and instead relying on vague non-quantitative descriptors, is that Members face a lack of certainty about the process by which their measure will be adjudicated by a future Panel or the AB. That is, because adjudicating the impact of a measure on a policy objective without actually quantifying its effects is inherently arbitrary, it follows that it is very difficult for Members to predict whether a measure will be found to contribute to a policy objective, and if so, by how much.

In short, at the heart of the problem with the 'design and structure' test (and any other tests that focus solely on the nature of the measure alone) is the failure to quantify the effects of that measure. Indeed, this idea has been raised before Panels and the AB on a number of occasions. First, in *US—Gasoline,* Venezuela argued that the baseline establishment rules must not only 'reflect a conservation purpose' but also be

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[398] Hume, *An Enquiry Concerning Human Understanding* (n 1) Section IV, Part I quoted in Chapter III, Section [3.0], pages 90–91.
[399] Panel, *China—Audiovisual Products* (n 386) [7.836]; AB, *Brazil—Retreaded Tyres* (n 379) [210].
[400] Panel, *EC—Seal Products* (n 384) [7.638].
[401] WTO, *United States: Measures Affecting the Cross-Border Supply of Gambling and Betting Services—Report of the Panel* (10 November 2004) WT/DS285/R [6.494].
[402] Panel, *Brazil—Retreaded Tyres* (n 384) [7.148].

shown to have had 'some positive conservation effect.'[403] In other words, Venezuela was arguing that the effects of the measure ought to be quantified and the impact of the measure must be analysed in light of the quantified effects. The AB rejected Venezuela's argument as follows:

> We do not believe, finally, that the clause 'if made effective in conjunction with restrictions on domestic production or consumption' was intended to establish an empirical "effects test" for the availability of the Article XX(g) exception. In the first place, the problem of determining causation, well-known in both domestic and international law, is always a difficult one. In the second place, in the field of conservation of exhaustible natural resources, a substantial period of time, perhaps years, may have to elapse before the effects attributable to implementation of a given measure may be observable. The legal characterization of such a measure is not reasonably made contingent upon occurrence of subsequent events. We are not, however, suggesting that consideration of the predictable effects of a measure is never relevant. In a particular case, should it become clear that realistically, a specific measure cannot in any possible situation have any positive effect on conservation goals, it would very probably be because that measure was not designed as a conservation regulation to begin with. In other words, it would not have been 'primarily aimed at' conservation of natural resources at all.[404]

In sum, the AB in *US—Gasoline* gives two reasons against quantifying effects: (1) that it is 'always (…) difficult'; and (2) that the effect of a measure on a policy objective may not be known until some time later. These reasons will be addressed in Sections [2.2] and [2.3] below respectively.

Before proceeding to address these two reasons, it is worth noting that the AB's response to Venezuela's causal argument in *US—Gasoline* did not put an end to the issue of whether the effects of a measure ought to be quantified. The idea was also put forward by the EC in *Brazil—Retreaded Tyres*,[405] which the Panel rejected.[406] Most recently, China argued that demonstrating the nexus between a measure and Article XX(g) should not only involve an examination of the text, structure and design of a measure, but also the effects of a measure.[407] The Panel in *China—Rare Earths* found that Panels are not required to consider the effects of a measure but are not precluded from doing so.[408] In sum, the idea that the empirical effects of a measure ought to be interrogated and analysed was rejected outright by a Panel the first time, and permitted but not considered necessary on the second occasion. It is contended, however, (1) that the Panels are yet to give a truly compelling reason for refusing to quantify the effect of a measure on a policy objective; and (2) that a genuine interrogation of the impact of a measure on a policy objective is impossible without doing so.

The Importance of a Non-Attribution Analysis

A second problem with the current approach in the jurisprudence is that it provides no scope for performing a non-attribution analysis. That is, the current 'design and structure' test or variations thereon

[403] Venezuela's Appellee's Submission, dated 18 March 1996; Venezuela's Statement at the Oral Hearing, dated 27 March 1996.
[404] AB, *US—Gasoline* (n 378) p 21.
[405] Panel, *Brazil—Retreaded Tyres* (n 384) [7.116].
[406] ibid [7.118].
[407] China's appellant's submission, para 208, cited at AB, *China—Rare Earths* (n 384) [5.102].
[408] WTO, *China: Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum—Report of the Panel* (26 March 2014) WT/DS431/R; WT/DS432/R and WT/DS433/R [5.113].

not only assume that causation can be deduced from the nature of the measure, but also that there are no other factors that confound that causal link between a measure and a policy objective. This seems unrealistic given that there are potentially numerous other factors that may have contributed to a particular policy outcome. Indeed, the idea that the causal impact of a measure must be separated from potentially confounding factors in this context was even raised in *EC—Seal Products,* where the Panel said:

> The entry into force of the EU Seal Regime may not be the only factor explaining a reduction in the number of seals hunted; other factors may also have come into play, including weather conditions that may have contributed to reducing the duration of the hunting season and the adoption of legislation on trade in seal products in other countries.[409]

Given the possibility that potentially confounding factors might confound the causal link in this way, it is important that a non-attribution analysis be undertaken before a fact-finder can make any assessment as to causation. Again, it is suggested that the Tripartite Non-Attribution/Causation Analysis offers the best approach for conducting a non-attribution and causation analysis. Before setting out how the Tripartite Non-Attribution/Causation Analysis might operate in this context, this chapter will first turn to address the two reasons that the AB gave for rejecting an effects test in *US—Gasoline*—namely: (1) the difficulty of determining causation; and (2) the problem of predicting future effects.

[2.2] The Difficulty of Determining Causation

The first reason that the AB gave for refusing to treat the relationship between a measure and its effect on a policy objective as causal in nature is that it is difficult to determine causation. Indeed, to repeat the quote from David Hume with which this thesis opened, '[t]here is no question, which on account of its importance, as well as difficulty, has caus'd more disputes both among antient and modern philosophers, than this concerning the efficacy of causes, or that quality which makes them be follow'd by their effects.'[410] Nonetheless, the difficulty inherent in performing a causal analysis is a poor reason for avoiding it. It would not, for example, be acceptable for a Panel or the AB to refuse to engage in a causal analysis in the context of trade remedies or subsidies simply because doing so was too difficult. By the same logic, it is unacceptable to refuse to engage in a causal analysis in the face of a textual agreement where the causal relationship between a measure and its policy objective is easily implied.

Perhaps the most obvious means of assessing causation is to use the non-quantitative tests of necessity and sufficiency. This would involve using either the *sine qua non* test or the weak necessity/strong sufficiency test to determine the causal link between the measure and a policy objective. It is suggested, however, that non-quantitative causal tests are inappropriate in this context for two reasons. First and most obviously, the effect of a measure tends to involve very precise measurements (eg, an effect might be that there was a 22.5% reduction in the number of turtles killed in nets in the wider Caribbean/western Atlantic region since

[409] Panel, *EC—Seal Products* (n 384) [7.458].
[410] Hume, *An Enquiry Concerning Human Understanding* (n 1) Book I, Section xiv, 206.

the introduction of the measure). The second reason that non-quantitative causal tests are more suited here is that it is suggested that determining causation in this context requires performing a non-attribution analysis—that is, the effect of a measure on its policy objective must be distinguished from the effect of potentially confounding factors. Non-quantitative causal tests are unable to separate causal factors in this way, which is yet another reason why quantitative causal tests are to be preferred here.

Before causation can be analysed, it remains first to quantify the effects of a measure on a particular policy objective. This involves collecting real-world data on the effect that a measure is having on a specific outcome over a series of years before and after the introduction of the measure. This was done, for example, in the case of *EC—Seal Products,* where Members collected data in relation to the decline in the volume of seal skins hunted[411] and imported into the EU[412] per year (even if the Panel only drew limited conclusions from this quantitative data in that case).[413] It is suggested that collecting data in relation to the effects of a measure ought to be done in every case, since determining causation is meaningless without doing so. This might involve a government agency of the Member who introduced the measure collecting the data and including it as an exhibit, as was done in *EC—Seal Products.*[414] Once the raw data on the effects of a measure is collected, this is not sufficient on its own to show that a measure caused the impact on the policy objective. Before causation can be determined, a non-attribution analysis must first be undertaken. The process of performing a non-attribution as well as a causation analysis will be set out in Sections [3.0] and [4.0] below.

[2.3] Estimating the Future Effect of a Measure on a Policy Objective

The second reason that the AB gave for avoiding the performance of a causal analysis here is that it is difficult to estimate the future effect of a measure on a policy objective. Accordingly, a Panel or the AB would be forced to make an adjudication about the contribution of a measure to a policy objective without the effect having yet manifested. Whilst the Panel's second argument is superior to its first, in practice, there have already been a number of cases where Panels and the AB have been required to assess the likely effect of a measure on its policy objective anyway,[415] to which this section now turns.

The Panel in *Brazil—Retreaded Tyres* was forced to consider the question of future effects in significant depth. In particular, the Panel was required to determine whether Brazil's import ban on retreaded tyres would, in the future, be 'necessary' to achieve the policy objective set out in Article XX(b) of the GATT 1994. In order to answer this question, the Panel examined the so-called 'qualitative' evidence regarding the measure, particularly the fact that retreaded tyres have a shorter lifespan than new tyres and will become

[411] Panel, *EC—Seal Products* (n 384) [7.457].
[412] ibid [7.456].
[413] ibid [7.458].
[414] See ibid [7.456] and [7.457].
[415] See, eg, Panel, *Brazil—Retreaded Tyres* (n 384) [7.127]–[7.130]; AB, *Brazil—Retreaded Tyres* (n 379) [151]–[155]; Panel, *EC—Seal Products* (n 384) [7.459]; AB, *EC—Seal Products* (n 379) [5.228]. Also, see generally, Panel, *US—Gasoline* (n 378); AB, *US—Gasoline* (n 378) and AB, *US—Shrimp* (n 377).

waste sooner and therefore add to Brazil's volumes of wasted tyres.[416] As a result of limiting their analysis to qualitative considerations alone, the EC argued that the Panel had only examined whether Brazil's import ban *could* make a contribution to the protection of human life or health, rather than having determined *actual* contribution.[417] Again the EC's objection here goes back ultimately to the fallacy of making *a priori* judgements that was observed above—namely, trying to assess causation by examining the nature of the cause, with no regard to its effect.

The AB in *Brazil—Retreaded Tyres*, citing *EC—Asbestos*,[418] upheld the Panel's reasoning and defended the right of the Panel and the AB to rely on qualitative, rather than quantitative, evidence in determining the likely future contribution of a measure to a policy objective.[419] The AB further held that:

> The results obtained from certain actions—for instance, measures adopted in order to attenuate global warming and climate change, or certain preventive actions to reduce the incidence of diseases that may manifest themselves only after a certain period of time—can only be evaluated with the benefit of time. In order to justify an import ban under Article XX(b), a Panel must be satisfied that it brings about a material contribution to the achievement of its objective. Such a demonstration can of course be made by resorting to evidence or data, pertaining to the past or the present, that establish that the import ban at issue makes a material contribution to the protection of public health or environmental objectives pursued. This is not, however, the only type of demonstration that could establish such a contribution. Thus, a Panel might conclude that an import ban is necessary on the basis of a demonstration that the import ban at issue is apt to produce a material contribution to the achievement of its objective. This demonstration could consist of quantitative projections in the future, or qualitative reasoning based on a set of hypotheses that are tested and supported by sufficient evidence.[420]

In other words, when confronted with a situation in which the AB is not in a position to assess the contribution of a measure to its policy objective, the AB may make an assessment of future contribution based simply on projection. That is, the AB's reasoning is that it is possible not only to adjudicate whether a causal link exists based simply on the qualities of the measure (with no analysis of its effects), but also whether a causal link exists based simply on the qualities of the measure where the effects have not yet even materialised. Reverting back to Hume's analogy of billiard balls, this might be compared to determining that the first billiard ball caused the second billiard ball to strike a third billiard ball based simply on the movement of the first billiard ball alone. This legal reasoning is highly specious.

The issue of assessing the future contribution of a measure to a policy objective under Article XX(a) based on minimal data arose again before the Panel in *EC—Seal Products*. Although the Panel in *EC—Seal Products* was provided with data in relation to the actual operation of the measure, it found that the data was inconclusive.[421] Accordingly, the Panel refrained from making any 'concrete conclusions' from the data—

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[416] Panel, *Brazil—Retreaded Tyres* (n 384) [7.127]–[7.130].
[417] European Communities' appellant's submission, para. 166.
[418] WTO, *European Communities: Measures Affecting Asbestos and Asbestos-Containing Products—Report of the Appellate Body* (12 March 2001) WT/DS135/AB/R [167] (original emphasis; footnote omitted).
[419] AB, *Brazil—Retreaded Tyres* (n 379) [146]–[147].
[420] ibid [151] (footnotes omitted).
[421] Panel, *EC—Seal Products* (n 384) [7.456].

though it did note briefly that the general trajectory appeared to demonstrate that seal product imports from the complainants into the EU market decreased significantly over the few years following the introduction of the measure.[422] Finding the quantitative data inadequate, the Panel drew on the AB decisions in *US—Tuna II (Mexico)*[423] and *US—COOL*[424] as support for the view that the degree of contribution of the measure to the fulfilment of the objective might be ascertained from examining 'the design, structure, and operation of the technical regulation, as well as evidence relating to the application of the measure'.[425] Accordingly, the Panel based its decision about the contribution of the measure to the policy objective based on these non-quantitative features.[426]

The complainants in *EC—Seal Products* contended that the Panel had failed to make 'clear and precise' findings in relation to the contribution of the measure to the objective and that such precision was necessary in order to establish a benchmark against which alternative measures might be compared.[427] The AB defended the reasoning of the Panel on the basis that there was 'limited and uneven information relating to the *actual* operation of the measure on the Panel record', including the actual impact of the measure on trade.[428] As such, the Panel had made clear that it was focusing on 'the design and expected operation of the measure' and that this focus has implications for the way the Panel framed its findings.[429] The AB recalled the guidance in *Brazil—Retreaded Tyres* that a Panel has some 'latitude' in determining the particular methodology for determining contribution, and that this methodology may be either qualitative or quantitative[430] depending on 'the nature, quantity, and quality of evidence existing at the time the analysis is made'.[431]

Additionally, the complainants argued that the Panel in *EC—Seal Products* were in error for assessing the contribution of the measure based on possibility, rather than actual contribution.[432] The AB further defended the Panel's approach with regard to other reasoning used by the AB in *Brazil—Retreaded Tyres*, holding that:

> In these disputes, the Panel faced significant limitations in examining aspects of the measure other than through its design, structure, and *expected* operation. Principally, the Panel recognized, correctly in our view, that there was limited and uneven information relating to the *actual* operation of the measure on the Panel record, in particular relating to the *actual* operation of the exceptions, and the *actual* impact the measure had on the EU seal product market. Given the particular nature

[422] ibid.
[423] WTO, *United States: Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products—Report of the Appellate Body* (16 May 2012) WT/DS381/AB/R (AB, *US—Tuna II (Mexico)*) [317].
[424] WTO, *United States: Certain Country of Origin Labelling (COOL) Requirements—Report of the Appellate Body* (29 June 2012) WT/DS384/AB/R; WT/DS386/AB/R (AB, *US—COOL*) [373].
[425] AB, *US—Tuna II (Mexico)* (n 416) [317] quoted in Panel, *EC—Seal Products* (n 384) [7.441].
[426] Panel, *EC—Seal Products* (n 384) [7.459].
[427] Canada's appellant's submission, para. 158; and Norway's appellant's submission, para. 257.
[428] AB, *EC—Seal Products* (n 379) [5.228] (emphasis original).
[429] ibid [5.223].
[430] ibid [5.221].
[431] AB, *Brazil—Retreaded Tyres* (n 379) [145].
[432] Canada's appellant's submission, para. 166; and Norway's appellant's submission, para. 284.

> of the measure at issue, and the specific circumstances of these disputes, it is not clear that the Panel could have done more.[433]

The AB concluded, '[w]e therefore do not see that a Panel falls into error by projecting what contribution will be brought about by the measure.'[434]

In sum, in both instances where a Panel or the AB has been required to assess the likely contribution of a measure to a policy objective in the future, it has made this assessment using non-quantitative data, with regard to 'the design, structure and operation'[435] of the measure at issue. It is suggested that a superior approach in this context is to use what limited quantitative data is available in order to make inferences about future events. It is suggested that the most appropriate quantitative tests for this purpose are the Statistical Significance Test and the Linear Regression Analysis, which were introduced in Chapter I. It may be recalled from Chapter I that the Statistical Significance Test can be used to estimate the probability that a particular effect was produced by random chance. The SST also eradicates the need to use vague labels such as 'a material contribution' as a means of determining the level of contribution. The Linear Regression Analysis, on the other hand, can be used to show the likely future trajectory of a phenomenon based on past data. This ability is particularly useful for a case involving limited data.

The first step is to separate the effects of the EU Seal Regime into sub-effects. In this case, the sub-effects under examination might include: (1) a reduction in the number of seal deaths; (2) a reduction in the number of commercial sealers; (3) a reduction in the corporate profits accruing to the sealing industry; and (4) consumer demand for seal furs. The separation of sub-effects can be seen diagrammatically at page 137. Taking the first sub-effect first, the SST can first be used in this context to indicate the degree of confidence that there is a causal relationship between the EU Seal Regime and a decline in the number of seal deaths. In order to demonstrate the way in which the SST would apply to the analysis required in the *EC—Seal Products* case, the following assumptions can be used:

- that 1,000 seals are sampled across the total population of seals for any one country in a uniformly random way across geographical region;
- that a seal is equally likely to be hunted in one geographical region as in any other; and
- that the number of seals in the total population is much higher than the 1,000 sampled seals. Therefore, any variation in the number of seals is due to the relatively small number of seals in the sample, rather than uncertainty about the number of seals killed in the total population.

[433] AB, *EC—Seal Products* (n 379) [5.228] (emphasis original; footnotes omitted).
[434] ibid [5.224].
[435] AB, *US—Tuna II (Mexico)* (n 416) [317]; and AB, *US—COOL* (n 417) [373].

With these assumptions in view, imagine that the following data was collected:

- every year for the ten years prior to the introduction of the EU Seal Regime, 1000 seals were sampled and, on average, 50 of those samples were killed, meaning that 5% of the seals in the sample were killed; and
- in the one year following the introduction of the EU Seal Regime, 35 seals (k) were killed out of a sample size of 1,000 seals (n), meaning that 3.5% of the seals in the sample were killed.

It is important to note that having more data prior to the introduction of the EU Seal Regime means that it is possible to have a reasonable amount of confidence in the estimated 5%.

Based on this data, it is possible to formulate the 'null hypothesis' and the 'alternative hypothesis' as follows:

- The *null hypothesis* is that there is no causal relationship between the introduction of the EU Seal Regime and the reduction in the number of seal deaths. This means that, even after the introduction of the EU Seal Regime, the probability of a seal dying within the sample size per year is p = 5%.
- The *alternative hypothesis* is that the EU Seal Regime contributes to a reduction in seal deaths.

The distribution of the number of seals that must be killed in order for both the null hypothesis vis-à-vis the alternate hypothesis to be accepted may be seen graphically below. The probability that the null hypothesis will be accepted is coloured blue, whilst the probability that the alternative hypothesis will be accepted is coloured red:

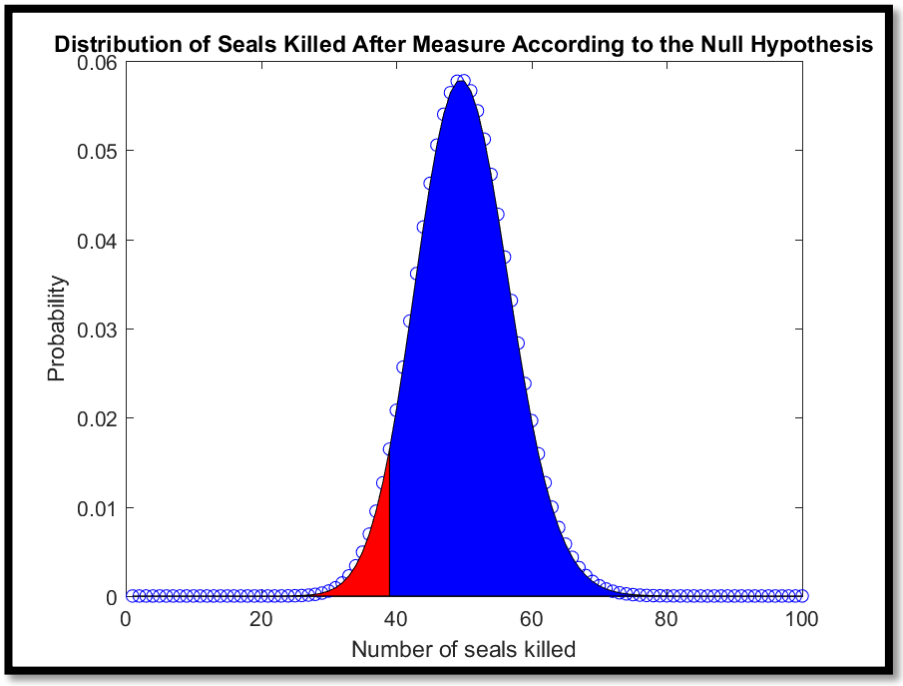

Figure 22: Probability distribution of seals killed per year according to the null hypothesis

It may be recalled from Chapter I that it is customary to set a significance value (represented as α) and that α is traditionally 5% or 0.05. In this case, α will be 5%, meaning that if the result of the SST is less than or equal to 5%, the null hypothesis will be rejected. The expectation value (η) is the size of the sample multiplied by the probability that a seal will be killed. Under the null hypothesis, the expectation value is 50 for a sample size of 1,000. This can be expressed mathematically as follows: Expectation value (η) = n*p = 50.

In the sample set after the first year following the introduction of the EU Seal Regime, 35 out of 1,000 dead seals were counted. In order to test whether this fulfils the significance value, it is necessary to calculate the probability that 35 seals or less were killed after the introduction of the EU Seal Regime. In statistical terms, this can be written as follows: $P(x \leq 35|p = 5\%)$. The probability of getting less than or equal to 35 dead seals per 1,000 seals sampled without the policy intervention may be calculated as follows:

$$P(x \leq 35|p = 5\%) = \sum_{a=0}^{35} P(x = a) = \sum_{a=0}^{35} \binom{n}{a} p^a (1-p)^{n-a}$$

$$= \sum_{a=0}^{35} \binom{1000}{a} 0.05^a 0.95^{1000-a} = 1.4\%$$

Given that the probability of 1.4% is less than 5%, the null hypothesis must be rejected. In other words, it is highly unlikely that the reduction in the number of seal deaths is due to random chance, and highly likely that there is a causal link between the introduction of the EU Seal Regime and the reduction in the number of seal deaths. Having established that it appears highly likely that there is a causal relationship between the EU Seal Regime and the reduction in the number of seal deaths, this section turns now to perform a Linear Regression Analysis, and to discuss how this might be used to predict future effects. It is useful to draw on the quantitative data reproduced in the Panel, *EC—Seal Products* case,[436] which is set out as follows:

[436] Panel, *EC—Seal Products* (n 384) [7.456].

Year	Canada		Norway	
	Number of Seal Skins Imported into the EU	**Value of Seal Skins Imported**	**Number of Seal Skins Imported into the EU**	**Value of Seal Skins Imported**
2002	20,016	€689	23,753	€1,627
2003	11,594	€455	10,996	€400
2004	6,169	€347	8,156	€319
2005	5,964	€396	9,046	€300
2006	6,609	€415	3,226	€175
2007	551	€44	5,437	€448
2008	25,892	€464	2,811	€213
2009	549	€48	3,225	€234
2010	10	€1	81	€26
2011	5	€1	36	€2

Figure 23: Data representing trade in seal skins from Canada and Norway to the EU from 2002 – 2011, as taken from *Panel—EC: Seal Products*, [7.456].

The Panel in *EC—Seal Products* conceded that the data showed a general trend indicating that seal skins from the complainants into the EU market have decreased significantly since the introduction of the measure.[437] Nonetheless, the Panel observed that it is difficult to know whether the downward trajectory might be explained by other factors, such as weather conditions and/or the adoption of legislation on trade in seal products in other countries.[438] The Linear Regression Analysis can be used to show whether the downward trend after the introduction of the EU Seal Measure in late 2009–2010 is a continuation of the same downward trend that was taking place prior to the introduction of the EU Seal Measure, or if, in fact, the decline is much sharper. In this particular linear regression analysis, the y-axis will use logarithmic data points because there is so much variation between the values in the data.

[437] ibid.
[438] ibid [7.458].

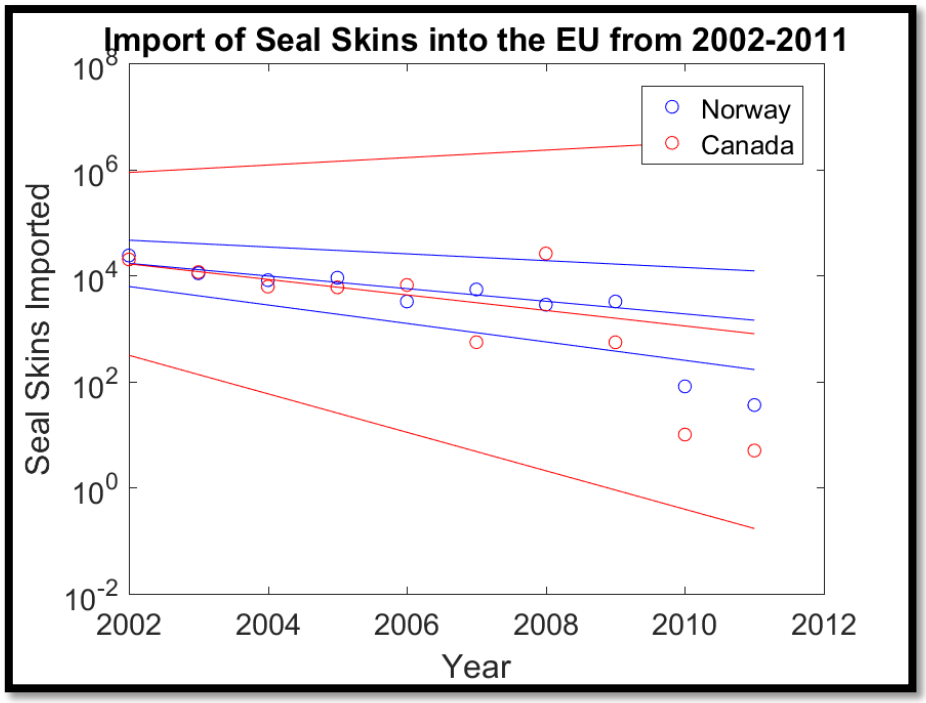

Figure 24: Linear regression analysis of the data represented in Figure 23.

The assumptions for this linear regression analysis are as follows:

- any uncertainties arising from potentially confounding factors in the data are the same for each value point;
- any uncertainties arising from potentially confounding factors are normally distributed once the log of the data has been taken;
- the uncertainties arising from potentially confounding factors for each value point must be independent of each other; and
- a linear fit to the logarithmic data is the most appropriate form of the fit.

The two central red and blue lines are 'least-square fit lines'—which means that they are lines that best optimise or 'fit' with the Canadian and Norwegian value points. If the EU Seal Measure had no influence on the trade of seal skins, it would be expected that the trade volumes in seal skins for both Canada and Norway would be close to the extrapolated lines in Figure 24. Instead, it can be seen from the above graph that, following the introduction of the EU Seal Measure in late 2009–2010, there is a sudden and dramatic drop in the trade of seal skins in the EU. This drop represents a factor of approximately 100.

The blue and red lines on either side of the 'least-square fit lines' indicate the range of statistical significance. As before, it is possible to formulate two hypotheses:

- a *null hypothesis*, which provides that there is no causal relationship between the EU Seal Measure and the reduction in the import of seal skins; and

- an *alternative hypothesis*, which is that the EU Seal Measure contributed to a reduction in the import of seal skins.

As above, the significance value (represented as α) will be set at 5% or 0.05—though it may be recalled from the above that the significance value may potentially be set at any value. Where a Member's data falls within the statistical significance lines, it must be said that the drop in data values is not considered statistically significant for the purpose of this model. Accordingly, for this reason, the null hypothesis must be accepted.

In relation to Norway's data, it can be seen that the Norwegian data values for 2010 and 2011 fall outside the statistical significance lines. This means that the null hypothesis should be rejected in relation to the Norwegian data. In contrast, the Canadian data values in relation to 2010 and 2011 fall within the range of statistical significance and therefore the alternative hypothesis must be rejected, and the null hypothesis accepted. It must be noted in relation to the Canadian data, however, that the data value for 2008 is an outlier that breaks the general linear pattern. This outlier to some extent distorts the 'fit' of the line as well as the SST lines on either side of it. Accordingly, the Canadian data and the concomitant acceptance of the null hypothesis must be approached with some caution.

The linear regression analysis and the SST were appropriate quantitative approaches for analysing the data reproduced by the Panel in *EC—Seal Products,* but they may not be the most appropriate quantitative tests in all cases. That is, the quantitative approach adopted depends upon the nature and quality of the data available. For example, where the data indicates that the trade flows were fairly constant until the introduction of a measure, it may be necessary to perform a linear regression analysis. Instead, it may be sufficient to: (1) perform a non-attribution analysis; (2) take the average of the data prior to the introduction of a measure; (3) compare it with the average of the data after the measure; (4) and then apply the SST to determine if the difference is significant.

Self-evidently, the more data before and after the introduction of the measure, the more likely that the quantitative approaches will produce an accurate result. Nonetheless, even where a Member is only able to provide one year's worth of data—say, the one year between the introduction of the measure and the litigation—the Statistical Significance Test is still able to provide Members with an approximate sense of how much difference the measure made to an outcome. This is particularly true where Members are able to provide data on the policy area for a significant period of time prior to the introduction of the measure. That is, the greater the number of years provided prior to the introduction of the measure, the greater the sample size, and the greater the probability that the SST will be accurate in turn. In this sense, the limited amount of data available after the introduction of the measure may, to some extent, be counteracted by providing fuller data about the state of the policy area prior to the introduction of the measure.

It may be objected that adopting such a quantitative approach requires particular expertise that is likely to be beyond the skills of a Panel or the Appellate Body. This objection is by no means fatal to the use of quantitative methods. Indeed, the WTO Secretariat has itself said that 'quantitative economic analysis is bound to occur with most regularity in WTO arbitrations due to their specific mandate and the need to make a precise award that in most cases must be quantified, often with reference to the effects of the inconsistent measure.'[439] Under Article 13.2 of the DSU, Panels may 'consult experts to obtain their opinion on certain aspects of the matter'. Such consultation could certainly extend to the consultation of statisticians or econometricians.

Moreover, the Panels and the AB have already used econometric tests in analysing other parts of WTO law. For example, in *US—COOL*, in making its determination as to whether US country of origin labelling requirements provided 'less favourable treatment' to Canadian and Mexican meat imports as compared to US meat under Article 2.1 of the TBT Agreement, the Panel extensively reviewed the parties' quantitative data in relation to the import volume of Canadian and Mexican cattle in the United States over the previous five to ten-year period.[440] The Panel commented that:

> There is no reason to consider economic or econometric evidence inappropriate per se, let alone exempt from Panels' review. The ultimate role of Panels is to conduct the necessary factual and legal review of the arguments and evidence advanced by the parties, and thus to carry out an objective assessment of the matter brought before the Panel. The basic function of Panels does not exclude—and may, in fact, necessitate—the review of economic and econometric evidence and arguments.[441]

Although the AB reversed part of the Panel's conclusions on other grounds, it did not express any disagreement with the Panel's reliance on quantitative data. Moreover, investigating authorities in the context of safeguards, antidumping and countervailing duties cases often rely on regression analysis in determining whether a subsidised or dumped import caused injury.[442] Indeed, the importance of quantitative analysis in the context of countervailing duties and antidumping cases was emphasised in *EC—Countervailing Measures on DRAM Chips*.[443] Finally, there is precedent for the judiciary using the SST in particular—for example, it has been frequently used by the judiciary in United States courts, including the United States Supreme Court.[444]

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[439] World Trade Organization, 'World Trade Report 2005: Exploring the Links between Trade, Standards and the WTO' (2005) <https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report05_e.pdf> accessed 15 October 2016.
[440] WTO, *United States: Certain Country of Origin Labelling (COOL) Requirements—Report of the Panel* (18 November 2011) WT/DS384/R; WT/DS386/R (Panel, *US—COOL*) [7.455]–[7.564].
[441] ibid [7.452].
[442] See generally, James J Fetzer, 'Inference for Econometric Modelling in Antidumping, Countervailing Duty and Safeguard Investigations' (2009) 8(4) WTR 545.
[443] Panel, *EC—Countervailing Measures on DRAM Chips* (n 132) [7.405].
[444] See, eg, *Castaneda v Partida* 430 US 482 (1977) and *Hazelwood School District v United States* 433 US 299 (1977). See generally, David H Kaye, 'Is Proof of Statistical Significance Relevant?' (1986) 61 Wash L Rev 1333.

Once it has been established that it is likely that a measure has had a positive impact on one of the sub-effects, it remains to attempt to divide responsibility for the sub-effect between the measure vis-à-vis potentially confounding factors, in the usual manner of the second step of the Tripartite process. Obviously, it is also very difficult to predict the future effect of potentially confounding factors on a sub-effect. It is suggested, however, that data about the past and present effect of potentially confounding factors might be collected and extrapolated in order to gain a sense of the breakdown of responsibility for a sub-effect between the measure and potentially confounding factors. Once this is done, a fact-finder might follow the usual steps in the Tripartite process, which will be detailed below. Obviously, this process would need to be repeated in relation to all of the sub-effects identified in the first step of the Tripartite process.

[3.0] Non-Attribution: The First Two Steps of the Tripartite Process

[3.1] Introduction

Once the effects (or projected effects) of a measure are known, a fact-finder must be satisfied that the effects are purely the result of the measure and not confused by some potentially confounding factor. Indeed, it was seen in Section [2.1] above that the absence of a non-attribution analysis is one of the fundamental problems with the current approach in the jurisprudence. Even the Panel in *EC—Seal Products* acknowledged that the quantitative data regarding the number of seals hunted may be confused by potentially confounding factors.[445] Similarly, there is a possibility that each of the sub-effects could be produced wholly or substantially by potentially confounding factors. It is important, therefore, to have some methodology in place for: (1) separating the causal impact of a measure vis-à-vis potentially confounding factors; and (2) establishing the existence of a causal link between the measure and the policy objective. It is suggested that the Tripartite Non-Attribution/Causation Analysis is the best methodology for performing these two functions.

It will be recalled that the Tripartite Non-Attribution/Causation Analysis was developed by the AB in *US—Wheat Gluten* in the context of analysing the injurious impact of safeguard measures. In this chapter, the Tripartite Non-Attribution/Causation Analysis will be applied to assist with determining whether a policy outcome was achieved as a result of a measure (as opposed to some potentially confounding factor). It is worth recalling the analytical steps set out by the AB in *US—Wheat Gluten*[446] and how they can be adapted to this context of non-injury: (1) authorities must separate the effects that the measure has had on various aspects pertaining to the policy objective; (2) authorities must then attribute to the measure the effects that it had on the policy objective vis-à-vis the effects that the potentially confounding factors had on the same policy objective; and (3) finally, authorities should determine whether there is a causal link between the measure and the policy objective. As in previous chapters, the first two steps are directed at performing a

[445] Panel, *EC—Seal Products* (n 384) [7.458].
[446] AB, *US—Wheat Gluten* (n 12) [69].

non-attribution analysis, while the third step is aimed at determining causation.[447] As in other chapters, this section will draw on a worked hypothetical example to illustrate how the Tripartite Non-Attribution/Causation Analysis would operate in practice. This chapter will take the example of the EU Seal Measure from the *EC—Seal Products* case.

[3.2] The First Step of the Non-Attribution Process

The first step of the non-attribution process involves identifying the types of effects that the measure has had on the policy objective. As in Chapter III, these effects will be called 'sub-effects' for the purpose of this chapter. Taking the example of the impact of the EU Seal Measure on improving seal welfare, the sub-effects of the measure might include, for example: (1) a reduction in the number of seal deaths; (2) a reduction in the number of commercial sealers; (3) a reduction in the corporate profits accruing to the sealing industry; and (4) a reduction in the amount of consumer demand for seal fur skins. Of course, it is possible that there may be more sub-effects than those identified here and in Figure 25. A representation of the separation of the sub-effects of a measure can be seen in Step 1 of Figure 25. As in previous chapters, the size of the sub-effects in Figure 25 is not indicative of their importance to the overall effect of the measure.

[447] ibid.

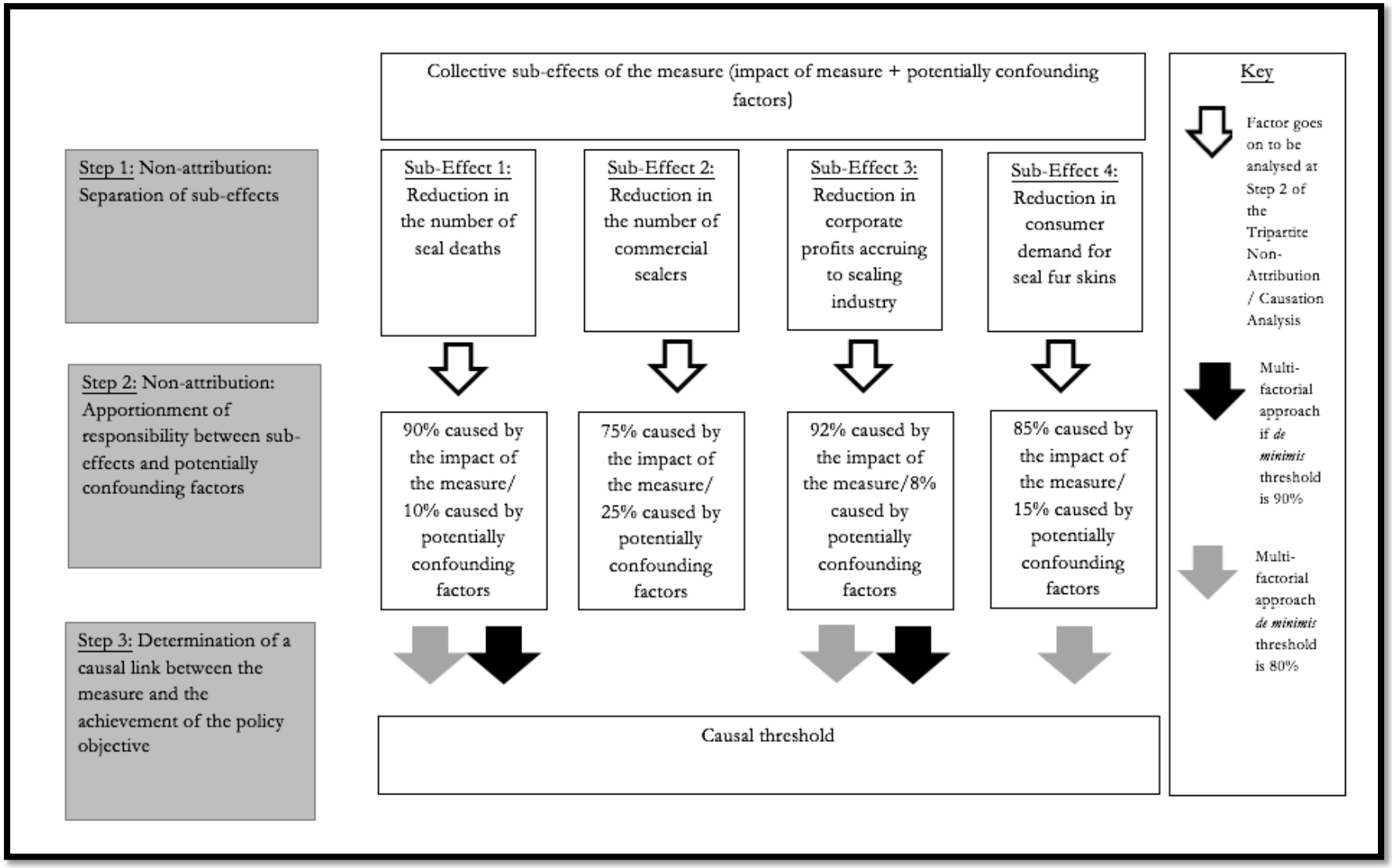

Figure 25: Overview of Steps 1, 2 and 3 of the Tripartite Non-Attribution/Causation Analysis with respect to Articles XX of the GATT and XIV of the GATS

[3.3] The Second Step of the Non-Attribution Process

Introduction

Once the sub-effects of the measure have been identified, the second step of the non-attribution process involves two broad types of analysis: (1) an Apportionment Analysis; and (2) a Qualification Analysis. The Apportionment Analysis is broadly aimed at apportioning causal responsibility for bringing about a policy objective to a measure vis-à-vis potentially confounding factors. To this end, a Panel must first consider those potentially confounding factors that are identified by the complaining Member; and then seek to disaggregate the effects of those potentially confounding factors from the effects of the measure. The Qualification Analysis, on the other hand, involves determining whether causal responsibility for a sub-effect exceeds a nominated *de minimis* threshold, and if it does, it will be included in the final causation analysis to be discussed in Section [4.0] below. As in previous chapters, a diagrammatic overview of the Tripartite Non-Attribution/Causation Analysis, as it is applied to the relationship between a measure and a policy objective, is set out in Figure 25 on page 137.

1. Apportionment Analysis

(a) Identification of Potentially Confounding Factors Stage

The complainant Member would be required to raise any potentially confounding factors that may also have contributed to the achievement of the policy objective. Given that the complainant Member may not necessarily be aware of all possible potentially confounding factors (particularly as they may pertain to some domestic matters of which a complainant Member may not have knowledge), it may be that Panels have a duty to investigate potentially confounding factors, as do the domestic competent authorities in the safeguards context.[448]

(b) Disentanglement Stage

It was seen in Section [2.2] above that the AB has held on several occasions that a determination as to the effectiveness of a measure may be made using both 'qualitative' and quantitative evidence.[449] It was also seen that the Panels and the AB have actually only used 'qualitative' (or non-quantitative) evidence in practice when making a determination as to the effectiveness of a measure, despite the fact that various Members have argued in favour of the importance of analysing real-world effects. It was argued in that section, and it will be argued again here, that drawing a causal link between a measure and a policy objective can only effectively be done by using quantitative data based on the effects of the measure.

An additional benefit of using quantitative data is that it is arguably the only way by which the effects of a measure vis-à-vis the effects of potentially confounding factors can meaningfully be separated. Obviously,

[448] AB, *US—Wheat Gluten* (n 12) [52]–[56].
[449] AB, *Brazil—Retreaded Tyres* (n 379) [146]; AB, *EC—Seal Products* (n 379) [5.215].

there has not been any commentary about separating the effects of a measure from the effects of potentially confounding factors, but it is suggested that it would follow the same fundamental principles as those that have been used in the trade remedies contexts. As such, it is contended that the methodology for disaggregating effects used in the context of trade remedies might be adapted here.[450] Alternatively, as was suggested in the previous chapter, Panels have the ability, pursuant to Article 13.2 of the DSU, to establish 'expert review groups' for the purpose of adapting the econometric approaches used in the trade remedies context to the current context. As in previous chapters, the overriding purpose of the disentanglement analysis is to be able to apportion a percentage of causal responsibility for the sub-effects to a measure vis-à-vis potentially confounding factors. Once the causal responsibility for the sub-effects has been apportioned in this way, it remains to determine which factors qualify for consideration under the Qualification Analysis.

2. *Qualification Analysis*

It will be recalled from previous chapters that the Qualification Analysis allows a fact-finder to assess which sub-effects qualify for inclusion in the causation analysis that makes up Step 3 of the Tripartite Non-Attribution/Causation Analysis. To this end, the most foundational questions are: Can sub-effects only be included in the causation analysis if they were 100% caused by a measure? Alternatively, can sub-effects be included in the causation analysis if they have been found to be caused by some kind of combination of a measure and potentially confounding factors (ie, what this thesis has termed the 'multi-factorial approach')? It is difficult to predict how a Panel or the AB would approach these basic questions. Nonetheless, the better approach would seem to be to use the 'multi-factorial approach'—that is, allowing sub-effects to be included in the causation analysis where they have been caused by some combination of a measure and potentially confounding factors. This is because, with something as complex as a policy outcome, it is rarely the case that a sub-effect would be the result of one casual factor alone. Indeed, the idea that a sub-effect was caused by only one causal factor would seem to be fairly unrealistic. Accordingly, it would surely be overly rigid to discount a sub-effect from inclusion in the causation analysis because of a small causal contribution from a potentially confounding factor.

Having just said that it is difficult to choose between only allowing sub-effects caused by the measure and a 'multi-factor approach' in the absence of any guidance from a Panel or the AB, it is even more difficult to nominate any *de minimis* threshold that a sub-effect must reach in order to be included in the causation analysis. That is, the question is—as in previous chapters—should a sub-effect that is 90% caused by the measure and 10% caused by potentially confounding factors be included in the causation analysis? What about a sub-effect that is 85% the product of a measure and 15% brought about by potentially confounding factors? It may be that a Panel or the AB would wish to hold off providing a precise percentage weighting

[450] In particular, see Prusa and Sharp (n 16) 77; and Durling and McCullough (n 181) 80; Kelly (n 16); Irwin (n 16); and Ahn and Moon (n 16) 1041–47.

in order to allow some degree of flexibility depending on the nature of the policy objective and the potentially confounding factors involved in the case in question.

It may be that the *de minimis* threshold will vary depending on the paragraph of the General Exceptions under appraisal. That is, the beginning of each paragraph of the General Exceptions contains a word (such as 'necessary') or a phrase (such as 'relating to') that indicates the level of contribution that a measure must make to its policy objective. The jurisprudence has consistently suggested that the degree of connection between the measure in question and the achievement of the policy objective varies with each paragraph of the General Exceptions. The Panel in *US—Gasoline* made this point:

> It does not seem reasonable to suppose that the WTO Members intended to require, in respect of each and every category, the same kind or degree of connection or relationship between the measure under appraisal and the state interest or policy sought to be promoted or realized.[451]

This statement, made in respect of Article XX of the GATT 1994, has also been extended to the interpretation of Article XIV of the GATS.[452] In *US—Gambling,* the Appellate Body similarly held that '[t]he required nexus—or "degree of connection"—between the measure and the interest is specified in the language of the paragraphs themselves, through the use of terms such as "relating to" and "necessary to"'.[453] Given this variation between the paragraphs of the General Exceptions, it would seem to make sense that the *de minimis* threshold may vary depending on the particular paragraph of the General Exceptions in question.

Obviously, the implication of having a lower *de minimis* threshold would be that more sub-effects would qualify for the causation analysis and therefore the likelihood of making out causation would be increased. The more likely that causation will be made out, the greater the likelihood, in turn, that a responding Member's measure will be found to have been effective in producing the intended policy objective. That said, this is only one of a number of considerations that a Panel or the AB must have regard to in determining whether a measure ought to be exempted under the General Exceptions. Accordingly, even if it is easier for a measure to be found to have caused a policy objective due to the use of the 'multi-factor approach' and a lower *de minimis* threshold, it does not follow from this that the measure will be exempted under the General Exceptions. That is, the first tier of analysis includes other considerations that require weighing and balancing, such as the relative importance of the policy objective and the trade-restrictiveness of the challenged measure. Moreover, the second tier of analysis involving the chapeau also requires separate treatment. In this sense, the analytical choices made here are important to one component of the decision about whether a measure ought to be exempted, but they are by no means determinative of the outcome.

[451] AB, *US—Gasoline* (n 378) p 18.
[452] AB, *US—Gambling* (n 386) [292].
[453] ibid.

[4.0] Causation: The Third Step of the Tripartite Process

Given that the jurisprudence has not in any way advocated for the use of a causal test, let alone use of the Tripartite Non-Attribution/Causation Analysis, it follows that there is no jurisprudence on point that may assist with: (1) the causal standard that must be reached; or (2) how causation ought to be made out in this context. In the absence of any guidance from the jurisprudence, it is difficult to provide any very detailed discussion of how the causal link should be drawn. It is nonetheless suggested that the best approach for determining causation is to examine those factors that have passed the Qualification Analysis and, with the use of a weak necessity/strong sufficiency test, assess whether they are sufficient collectively to have caused the intended policy objective.

[5.0] Conclusion

The Panels and the AB have sometimes referred to the relationship between a measure and its intended policy objective as if it were causal in nature. This would seem to make sense given that a causal link between the two is easily implied—and, indeed, it has been implied by several Members that have argued in favour of a causal analysis in this context. Nonetheless, the Panels and the AB have been reluctant to: (1) quantify the real-world effects of the challenged measure; and (2) use causal tests to interrogate the relationship between the measure and those real-world effects. Instead, they have attempted to assess causal contribution simply by looking at the nature of the measure, and sought, from these, to infer their likely effects.

This chapter has argued against this approach for two chief reasons. First, the current approach is premised on a misconception that causation can be inferred simply by looking at the nature of the cause. Second, even if one could infer causation simply by looking at the nature of the measure, this does not account for the possibility that potentially confounding factors could confuse such a causal link. It follows from these two observations that a better approach to determining the level of causal contribution that a measure makes to a policy objective is: (1) to collect real-world data about the effects of the measure; and (2) to subject that data to a non-attribution and causation analysis through applying the Tripartite Non-Attribution/Causation Analysis. It is conceded that gathering real-world data is particularly troublesome where the effects of a measure may not yet have manifested—which is one of the reasons that the AB in *US—Gasoline* gave for refusing to rely on effects when determining contribution. It is suggested, however, that this reason, whilst reasonable, is not insurmountable, as there are some quantitative approaches that can be used in order to predict future effects based on past data. The SST and a LRA have been put forward as suitable in this chapter, but it is quite possible that different quantitative methods might be used depending on the nature of the data in question.

The contribution of this chapter, then, is to set out the implications that ought to follow from regarding the relationship between a measure and its intended policy objective as a causal relationship. It may well be objected that the approach to determining causation that has been detailed in this chapter is far more involved and more complex than the current approach taken by the Panel and the AB. This complexity, however, is a direct reflection of the complexity of causation itself. The current approach in the jurisprudence may be simpler and more straightforward, but this is because it fails adequately to grapple with the implications of the link between a measure and its policy objective as being causal in nature.

Chapter V:
Retaliatory Measures

[1.0] Introduction

The concept of reparation is an important principle in general international law,[454] and the concept of causation is fundamental to the way in which reparation is calculated.[455] Reparation as such, however, does not exist in WTO law because remedies are prospective—that is, the objective of the dispute settlement mechanism is to bring about a mutually acceptable solution to the parties going forward,[456] and in the absence of that, to secure the withdrawal of the measures that are inconsistent with the covered agreements.[457] If both these primary aims fail, a Member may seek compensation from the other;[458] and, even then, compensation is only a voluntary remedy.[459] The last resort for Members of the WTO to resolve their dispute involves the possibility of retaliation. This may be used where a Member fails to bring its measure into compliance with the covered agreement(s) and the other Member 'suspend[s] the application of concessions or other obligations under the covered agreements on a discriminatory basis vis-à-vis the other Member, subject to authorization by the DSB of such measures'[460] ('retaliatory measures').[461]

There is a considerable amount of academic debate regarding the precise policy goal of retaliatory measures.[462] Indeed, the arbitrators in *United States—Continued Dumping and Subsidy Offset Act of 2000*[463] said that 'it is not completely clear what role is to be played by the suspension of obligations in the DSU and a

[454] *Case Concerning the Factory at Chorzów* (Jurisdiction) PCIJ Rep Series A No. 9 p 21; Article 31, *Draft Articles on the Responsibility of States for Internationally Wrongful Acts*, Report of the ILC on the Work of its 53rd Session, UN GAOR, 56th Sess, Supp No 10, p 43, UN Doc A/56/10 (2001).

[455] Article 31(2), *Draft Articles on the Responsibility of States for Internationally Wrongful Acts*, Report of the ILC on the Work of its Fifty-third Session, UN GAOR, 56th Sess, Supp No 10, UN Doc A/56/10 (2001); Para 9 of the ILC's Commentary to Art 31 ARS, *Report of the International Law Commission on the work of its 53rd session*, 2001, UN Doc A/56/10, para 77, at 92.

[456] Art 3.7 DSU.

[457] ibid.

[458] ibid.

[459] Art 22.1 DSU.

[460] Art 3.7 DSU.

[461] The suspension of concessions occurs when Member A denies a benefit to Member B that Member A is otherwise legally required to grant. For example, the DSB might authorise Member A to suspend its tariff concessions on products imported from Member B because of Member B's failure to implement its DSB ruling. The words 'retaliation' or 'retaliatory measures' are not used in the DSU, though they will be used throughout this chapter.

[462] See, eg, Gregory Shaffer and Daniel Ganin, 'Extrapolating Purpose from Practice: Rebalancing or Inducing Compliance' in Chad P Bown and Joost Pauwelyn, *The Law, Economics and Politics of Retaliation in WTO Dispute Settlement* (CUP 2010); Joost Pauwelyn, 'The Calculation and Design of Trade Retaliation in Context: What is the Goal of Suspending WTO Obligations?' in Bown and Pauwelyn (n 455); Alan O Sykes, 'Optimal Sanctions in the WTO: The Case for Decoupling (and the Uneasy Case for the Status Quo)' in Bown and Pauwelyn (n 455); Steve Charnovitz, 'Rethinking WTO Trade Sanctions' (2001) 95 AJIL 792.

[463] —*Recourse to Arbitration by Brazil under Article 22.6 of the DSU—Decision by the Arbitrators* (31 August 2004) WT/DS217/ARB/BRA [6.4].

large part of the conceptual debate that took place in these proceedings could have been avoided if a clear "object and purpose" were identified.'[464] Some cases appear to conceive of retaliatory measures as serving a compensatory function,[465] some as a means of enforcing compliance with a DSB ruling,[466] and yet others as punitive in nature.[467] A discussion of the policy goals underlying the retaliatory measures is beyond the scope of this chapter, but it is fair to say that retaliatory measures have been variously aimed at each of these policy goals in different cases. Moreover, the jurisprudence appears to support the view that there has been a gradual evolution from compensation to enforcing compliance with the DSB ruling.[468]

The value of the retaliatory measures suspended must be 'equivalent' to the nullification or impairment of benefits that the measure has caused,[469] except in the context of the SCM Agreement, where the retaliatory measures must be 'appropriate'.[470] To that end, Articles 22.6 DSU and 4.10 SCM Agreement arbitrators have discussed various methodologies by which the level of nullification or impairment might be identified.[471] In doing so, however, they have effectively overlooked the need explicitly to demonstrate, as

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[464] ibid [6.4].

[465] The arbitrators in *US—Gambling* confirmed that it was difficult to calculate compensation accurately, given the limited information available: see WTO, *United States: Measures Affecting the Cross-Border Supply of Gambling and Betting Services—Recourse to Arbitration by the United States Under Article 22.6 of the DSU—Decision by the Arbitrators* (21 December 2007) WT/DS285/ARB (*US—Gambling (Recourse to Arbitration—Art 22.6)*) [3.173]–[74].

[466] WTO, *European Communities: Regime for the Importation, Sale and Distribution of Bananas—Recourse to Arbitration by the European Communities under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement* (9 April 1999) WT/DS27/ARB (*EC—Bananas III (US) (Recourse to Arbitration—Art 22.6 DSU and Art 4.11 SCM Agreement)*) [6.3]; WTO, *European Communities: Regime for the Importation, Sale and Distribution of Bananas—Recourse to Arbitration by Ecuador under Article 22.6 of the DSU and Article 4.11of the SCM Agreement—Decision by the Arbitrators* (24 March 2000) WT/DS27/ARB/ECU (*EC—Bananas (Ecuador) (Recourse to Arbitration—Art 22.6 DSU and Art 4.11 SCM Agreement)*) [76]; WTO, *Brazil: Export Financing Programme for Aircraft—Recourse to Arbitration by Brazil under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement* (28 August 2000) WT/DS46/ARB *(Brazil—Aircraft (Recourse to Arbitration—Art 22.6))* [3.44]; WTO, *United States: Tax Treatments for 'Foreign Sales Corporations'—Recourse to Arbitration by the European Communities under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement* (30 August 2002) WT/DS108/ARB *(US—FSC (Recourse to Arbitration—Art 22.6))* [5.52]; *WTO, Canada—Export Credits and Loan Guarantees for Regional Aircraft—Recourse to Arbitration by Canada under Article 22.6 DSU and Article 4.11 of the SCM Agreement* (17 February 2003) WT/DS222/ARB *(Canada—Aircraft Credits and Guarantees (Recourse to Arbitration—Art 22.6 DSU)* [3.48] and [3.107].

[467] *Canada—Aircraft Credits and Guarantees (Recourse to Arbitration—Art 22.6 DSU)* [3.121] but cf *EC—Bananas III (US)* (n 459), where the arbitrators stated that '(…) there is nothing in Article 22.1 of the DSU, (…), that could be read as a justification for counter-measures of a punitive nature': [6.3].

[468] Joost Pauwelyn, 'The Calculation and Design of Trade Retaliation in Context: What is the Goal of Suspending WTO Obligations?' in Bown and Pauwelyn (n 455).

[469] Article 22.4 of the DSU.

[470] Article 4.10 of the SCM Agreement. Footnote 10 to Article 4.10 states that the wording 'appropriate' is 'not meant to allow countermeasures that are disproportionate in light of the fact that the subsidies dealt with under these provisions are prohibited'. In other words, the word 'appropriate' anticipates a certain degree of proportionality. In this sense, the requirement that countermeasures be 'equivalent' (Article 22.4 DSU) or 'appropriate' (Article 4.10 SCM Agreement) is consistent with the principle in general international law that countermeasures in response to an internationally wrongful act must be 'proportionate' to the injury suffered by the state taking the countermeasures: see Article 51, *Draft Articles on the Responsibility of States for Internationally Wrongful Acts* (n 437).

[471] See, eg, *EC—Bananas III (US) (Recourse to Arbitration—Art 22.6)* (n 459) [7.1] (regarding the use of counterfactuals); *US—Gambling (Recourse to Arbitration—Art 22.6)* (n 458) [3.136] and [3.178]; WTO, *United States: Continued Dumping and Subsidy Offset Act of 2000—Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators* (31 August 2004) WT/DS217/ARB/IND [3.114]–[3.151]; WTO, *United States: Continued Dumping and Subsidy Offset Act of 2000—Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators* (31 August 2004) WT/DS217/ARB/KOR [3.114]–[151]; WTO, *United States: Continued Dumping and Subsidy Offset Act of 2000—Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators* (31 August 2004) WT/DS217/ARB/JPN [3.114]–[3.151]; WTO, *United States: Certain Country of Origin Labelling (COOL) Requirements—*

an initial step, the causal link between a Member's failure to bring its measure into conformity with a DSB ruling and the level of nullification or impairment incurred (that is, a causation analysis). In fact, a discussion of causation appears only to take place in the jurisprudence where it is *not* made out, which seems to lead to the conclusion that there is a presumption of a causal link in this context. Moreover, arbitrators have also neglected meaningfully to consider any approach by which causal factors that are unrelated to the inconsistency with the DSB ruling (potentially confounding factors) might be separated from those causal factors that are related to a Member's failure to bring its measure into conformity with the covered agreement(s) (that is, a non-attribution analysis).

The jurisprudence consistently shows, however, that both a non-attribution and a causation analysis are in fact necessary in the context of Articles 22.6 DSU and 4.10 SCM Agreement ('retaliation arbitrations'). That is, there are a number of cases where the responding Member puts forward evidence that potentially confounding factors have attenuated the causal link between a responding Member's failure to comply with a DSB ruling and the complainant Member's nullification and impairment. The jurisprudence has not dealt with these in any consistent way. This chapter argues that potentially confounding factors will always remain a feature of retaliation arbitrations and, therefore, that they ought to be considered in a more systematic manner—namely, by using a more formalised non-attribution analysis. It follows from this that a direct causal link between a responding Member's failure to comply with a DSB ruling and the complainant Member's nullification and impairment cannot be presumed. Instead, as a matter of legal logic, arbitrators must perform a non-attribution analysis before establishing this causal link and then turning to consider how nullification and impairment ought to be quantified.

One part of the analysis in which arbitrators do consistently use a causal test is in relation to their determination of nullification and impairment. In that part of the analysis, arbitrators use a counterfactual test to interrogate the difference between the value of trade (if any) that took place with the WTO-inconsistent measure in place vis-à-vis the value of trade that would have taken place over the same period if the responding Member had complied with the DSB ruling. There are a number of insoluble difficulties with the use of a counterfactual test here. One obvious problem is that the use of a counterfactual here raises the hypothetical world problem, as it is difficult to reconstruct the likely trade flows that would have taken place if the responding Member had complied with the DSB ruling. A second problem is that it is premised on the idea that no potentially confounding factors have confused the causal link between the responding Member's failure to comply with the DSB ruling and the nullification and impairment. Again, use of the Tripartite Causation/Non-Attribution Analysis in this context would solve this second problem.

Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators (7 December 2015) WT/DS384/ARB; WT/DS386/ARB (*US—COOL (Recourse to Arbitration—Article 22.6)*) [6.27]–[6.32]; WTO, *United States—Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators* (25 April 2017) WT/DS381/ARB (*US—Tuna (Recourse to Arbitration—Article 22.6)*) [6.49]–[6.77].

A final benefit of the Tripartite Causation/Non-Attribution Analysis is that the results of its analysis might be used in order to inform the quantification of nullification and impairment.

[2.0] Jurisprudence Concerning Non-Attribution and Causation in respect of the Retaliatory Measures

[2.1] Causation in Retaliation Arbitrations

Once a Panel has found that a measure is inconsistent with the covered agreements, there is a presumption in place, pursuant to Article 3.8 DSU, that the inconsistency has caused nullification and impairment. For the purposes of making a determination as to whether a measure is inconsistent with the covered agreement, it is sufficient simply to make such a presumption, whilst the onus is on the opposing Member to rebut it. Arbitrators, in the context of Articles 22.6 DSU and 4.10 SCM Agreement, however, are required to quantify the complainant Member's level of nullification and impairment. Article XXIII:1 of the GATT 1994 provides that the nullification or impairment must arise 'as a result of (…) the failure of another contracting party to carry out its obligations under this Agreement'. In other words, Article XXIII:1 of the GATT 1994 would seem to require arbitrators to quantify the level of nullification and impairment that was actually 'a result of (…)' or *caused by* the failure of a responding Member to bring its measure into conformity with the DSB ruling.

As a matter of legal logic, therefore, it follows that the first consideration for arbitrators must be whether there was a causal link between a responding Member's failure to bring its measure into conformity with a DSB ruling and the complainant Member's nullification and impairment. Only then, as a secondary step, would it be appropriate for arbitrators to attempt to estimate the level of nullification and impairment caused to a complainant Member's industry. The current jurisprudence demonstrates, however, that arbitrators have not set out any clear, rigorous method for interrogating the causal link between a Member's failure to conform with a DSB ruling and a complainant Member's nullification and impairment. Indeed, the jurisprudence reflects a general paucity of discussion regarding the way in which the causal link should be drawn; and causation appears only to be discussed in those cases in which the causal link is *not* made out. The discussion now turns to two such cases.

The existence of a causal link was discussed explicitly and ultimately rejected in *Canada—Aircraft* (Article 22.6). In that case, Brazil argued that, but for Canada's failure to comply with the DSB ruling, Air Wisconsin would have changed suppliers from Canada's Bombardier aircraft to Brazil's Embraer aircraft.[472] The arbitrators concluded that there was no causal link between Canada's failure to comply with the DSB ruling and the nullification and impairment caused to Brazil's industry.[473] This was because the arbitrators believed

[472] WTO, *Canada: Export Credits and Loan Guarantees for Regional Aircraft—Recourse to Arbitration by Canada under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement—Decision by the Arbitrators* (17 February 2003) WT/DS222/ARB (*Canada—Aircraft Credits and Guarantees (Recourse to Arbitration—Article 22.6 and Article 4.11)*) [3.22].
[473] ibid [3.22]–[23].

that Canada's Bombardier aircraft would have had incentives to retain its relationship with Air Wisconsin and that the costs to retain the contract would not have been too great.[474] Indeed, Brazil even made this point elsewhere in its written submission.[475] In other words, the arbitrators essentially looked at the commercial reality of the relationship between Air Wisconsin and Bombardier to conclude that it was unlikely that Canada's failure to comply with the DSB ruling would have caused the relationship between Air Wisconsin and Bombardier to end. It concluded from this, then, that Canada's failure to comply with the DSB ruling did not cause the level of nullification and impairment to Brazil's industry that Brazil proposed. To put this in causal terms, Brazil used a *sine qua non* test to contend that Canada's failure to comply with its DSB ruling had meant that its industry did not receive a benefit that it otherwise would have received. The arbitrators might also be said to have found against causation using the *sine qua non* test, in the sense that they established that the hypothetical world that Brazil proposed would not have come to pass anyway.

A causal link was also rejected in *EC—Hormones (Article 22.6)*. In that case, the US argued that, but for the fact that the EC did not comply with its DSB ruling, US exporters would have engaged in marketing and promotional efforts that would, in turn, have led to increased exports of edible beef offal worth $20.1 million.[476] The arbitrators, however, concluded that the increased exports that may have resulted from the greater marketing and promotional efforts were 'too speculative'.[477] That is, the US' argument was based on what would have happened in a hypothetical world. Without any more tangible evidence regarding the effect that marketing and promotional efforts would have had, the arbitrators could not make out causation.

In short, there are two cases in which the arbitrators did *not* find a causal link. In both cases, the arbitrators used a *sine qua non* test to interrogate the arguments of Members. That is, the arbitrators set up a parallel hypothetical world in which it compared the current level of nullification and impairment with the level of nullification and impairment that would be expected if the responding Member had complied with the DSB ruling. In both cases, the reason that causation was not found relates to the fact that the arbitrators did not find the alternative hypothetical scenario put forward by the complainant Member to be plausible. The difficulty with the approach of the arbitrators here is that it is impossible truly to know whether the scenario put forward by the complainant Member would have happened or not due to the intractable 'hypothetical world problem'.[478]

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[474] ibid.

[475] Canada rebuttal submission, [45], quoting Brazil's written submission in WTO, *Brazil: Export Financing Programme for Aircraft—Recourse to Arbitration by Brazil under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement—Decision by the Arbitrators* (28 August 2000) WT/DS46/ARB [56] quoted in *Canada—Aircraft Credits and Guarantees (Recourse to Arbitration—Article 22.6 and Article 4.11)* (n 459) n 53.

[476] WTO, *European Communities: Measures Concerning Meat and Meat Products (Hormones)—Recourse to Arbitration by the European Communities under Article 22.6—Decision by the Arbitrators* (12 July 1999) WT/DS26/ARB (*EC—Hormones (US (Recourse to Arbitration—Article 22.6))*) [76]–[77].

[477] ibid [77].

[478] For an explanation of 'the hypothetical world problem', see Chapter I, Section [2.2], pages 12–14.

Whilst these two cases are examples of where the arbitrators did *not* make out causation, as has been mentioned above, causation tends not to be explicitly discussed in those cases where a causal link *is* found. Accordingly, it is difficult to discern the basis on which a positive causal link is found. This omission would seem to lead to the conclusion that there is some kind of presumption in place in this context that a causal link exists, unless found otherwise—that is, the presumption is rebutted. Just as arbitrators have failed to elucidate the basis on which causation may be made out, so, too, have they failed to engage in any formal non-attribution analysis. To put this in symbolic language, arbitrators skip to quantify the effect of C, without first making a determination that C actually caused E, or that E was not partially caused by X, Y and/or Z. Accordingly, by skipping over any true non-attribution and causation analysis, arbitrators are just as guilty as ordinary Panels of presuming the causal link between a responding Member's failure to comply with its DSB ruling and the nullification and impairment to a complaining Member's industry.

Moreover, by making this presumption of nullification and impairment as a result of a Member's failure to comply with its DSB ruling, the arbitrators are making the same logical fallacy as the AB was observed to have made in Chapters III and IV above. That is, such a presumption is essentially a way of leaping from the existence of a supposed cause to an effect without demonstrating the causal link between the two. Yet again, the trouble with making such a logical leap is summarised in the extended quotation from Hume that was excerpted in Chapter III and has been repeated in each subsequent chapter—in short, 'the effect is totally different from the cause, and consequently can never be discovered in it.'[479] That is, nullification and impairment to a complaining Member's industry cannot be presumed simply from the responding Member's failure to comply with its DSB ruling. Instead of making such a presumption, the arbitrators ought positively to draw the causal link between the two with the same rigour as it currently does to disprove the link between the two. Drawing an accurate causal link arguably also involves a non-attribution analysis, and it is to this that the chapter now turns.

[2.2] Non-Attribution in Retaliation Arbitrations

Despite the lack of a formal non-attribution analysis, the arbitrators have, at several points, engaged in an informal process of separating potentially confounding factors from causal factors. Moreover, the arbitrators have even explicitly acknowledged the importance of considering the way in which potentially confounding factors might mitigate the causal link between the responding Member's failure to comply with the DSB ruling and a complainant Member's nullification and impairment. In *EC—Hormones (Article 22.6—United States),* the arbitrators gave credence to this idea, saying:

> What would annual prospective US exports of hormone-treated beef and beef products to the EC be if the EC had withdrawn the ban on 13 May 1999? An answer to this question, like any question about future events, can only be a reasoned estimate. It is necessarily based on certain assumptions. In making those estimates and assumptions, we need to guard against claims of lost opportunities

[479] For the more extended quotation, see Hume, *An Enquiry Concerning Human Understanding* (n 1) Section IV, Part I quoted in Chapter III, Section [3.0] pages 90–91.

> where the causal link with the inconsistent hormone ban is less than apparent, ie where exports are allegedly forgone not because of the ban but due to other circumstances.[480]

The jurisprudence indicates that responding Members have consistently put forward potentially confounding factors when contending that the causal link between the failure to bring its measure(s) into conformity with a DSB ruling and the resulting nullification and impairment may have been confused. Nonetheless, despite some level of receptiveness to the idea that potentially confounding factors might attenuate the causal link, arbitrators are yet to develop any formalised non-attribution analysis or even a consistent approach to disaggregating potentially confounding factors. This can be seen from a survey of some of the jurisprudence.

To take the case of *US—Gambling (Article 22.6—United States)* first, this case concerned the question of whether Antigua's proposed level of suspension was equivalent to the level of nullification or impairment of benefits accruing to Antigua as a result of the United States' failure to bring its GATS-inconsistent measure into conformity with its obligations; and, if not, what the correct level of nullification or impairment was. With respect to calculating the level of nullification or impairment, the United States argued that its failure to bring its measure into conformity did not cause the level of injury contended by Antigua. The United States contended that the level of nullification or impairment put forward by Antigua had to be mitigated by the fact that Antigua lost market share in other countries due to the low market entry barriers to internet gambling and the ensuing growth in competition from operators in other locations.[481] Antigua dismissed all of the United States' arguments,[482] and the arbitrators were required to make their own assessment as to the level of nullification or impairment brought about by the United States' failure to bring its measure into conformity with the DSB ruling.

Finding the approach of both parties deficient,[483] the arbitrators sought to calculate the level of nullification and impairment using its own approach.[484] To this end, the arbitrators: (1) sought to establish Antigua's approximate revenues from remote gambling services exports to the United States; (2) adjusted the time series for the impact of competing suppliers; (3) determined what the likely proportion of betting services on horseracing derived from Antigua's total revenues from remote gambling; and (4) considered the demand for gambling services on horseracing in the United States.[485] Most importantly, for present purposes, the arbitrators took into account the potentially confounding factor raised by the United States—namely, Antigua's lost market share due to low market entry barriers—and considered the mitigating impact this may have had on the level of nullification and impairment. To do this, the arbitrators looked at data concerning countries in the region who compete with Antigua for the US market and, therefore, should

[480] *EC—Hormones (US (Recourse to Arbitration—Article 22.6))* (n 469) [41]; see also *EC—Hormones (US (Recourse to Arbitration—Article 22.6)* (n 469) [40].
[481] *US—Gambling (Recourse to Arbitration—Article 22.6)* (n 458) [3.127]–[28].
[482] ibid [3.131].
[483] ibid [3.172].
[484] ibid [3.173].
[485] ibid [3.174].

have been similarly affected by the US' measures.[486] When analysing this data, the arbitrators concluded that Antigua underperformed in the relevant period 2002–2006 relative to its main competitors.[487] The arbitrators then reduced Antigua's proposed level of nullification and impairment on account of the fact that the data indicated that the nullification and impairment had not been caused by the US' failure to comply with the DSB ruling alone. In sum, the arbitrators did allow for the idea that potentially confounding factors—in this case, Antigua's loss of market share—could attenuate the causal link between the US' failure to apply the DSB ruling and the nullification and impairment to Antigua.

The idea that potentially confounding factors might mitigate the causal link between a failure to comply with the DSB ruling and the ensuing nullification and impairment arose again in the *US—Tuna* case. In that case, the arbitrators considered the level of nullification or impairment that Mexico suffered as a result of the US' 2013 Tuna Measure. The US argued that the nullification and impairment of Mexico's tuna industry as a result of the 2013 Tuna Measure must be mitigated by a change in consumer preferences in the US market. That is, the US contended that there was a decline in the consumption of canned yellowfin at the same time as the 2013 Tuna Measure was taking effect.[488] The arbitrators analysed the data provided and concluded that 'the sharpness of the decline in both imports of tuna from Mexico and purchases of yellowfin by US canneries following the adoption of the Tuna Measure in 1990 suggests that the adoption of the Tuna Measure was the main reason for the declining trend.'[489] The arbitrators went on to say that it was not persuaded by the US' argument that the sharp decline was brought about by a sharp change in consumer preferences.[490] The arbitrators also pointed to the fact that the decline 'came on the heels of the adoption of the Tuna Measure'.[491] It concluded with respect to the US' argument regarding the change in consumer preferences that '[a]lthough we do not rule out that this may be possible, in our view the United States has not submitted evidence sufficient to establish the existence of such a change in this case.'[492]

In short, the arbitrators in this case made a decision about the cause of the decline in the purchase of yellowfin by US canneries based on the sharp change in the gradient of the graph and the proximity of that change to the introduction of the Tuna Measure. In so doing, the arbitrators took an all-or-nothing approach based on the coincidence in time between the two phenomena, and did not interrogate the way in which the change in consumer preferences might have had the effect of attenuating the causal link between the US' measure and Mexico's level of nullification and impairment. In other words, unlike in *US—Gambling,* the arbitrators did not make any attempt to discern how the effect of the potentially confounding factors may have had the effect of reducing the level of nullification and impairment.

[486] ibid [3.181]–[82].
[487] ibid.
[488] *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [5.29].
[489] ibid [5.31].
[490] ibid [5.32].
[491] ibid.
[492] ibid.

The arbitrators in *US—COOL* gave more scope to the idea that potentially confounding factors attenuate the causal link between a responding Member's failure to comply with a DSB ruling and the complainant Member's ultimate nullification and impairment than any other arbitrators. The arbitrators in that case considered the proposed level of nullification and impairment by Canada and Mexico and then proposed their own determination, which took account of a number of potentially confounding factors. Whereas Mexico's proposed level of nullification and impairment relied on simulating the use of the COOL impact on export prices and a derived elasticity of export supply,[493] Canada's proposed level of nullification and impairment was based on the assumption that there was '[a] high level of integration between the Canadian and US markets'.[494] Canada argued that there was 'price arbitrage' between the Canadian export price of live cattle and hogs and the price of domestic cattle and hogs, and that '[t]here [were] no domestic factors that impede this mechanism'.[495] Canada argued that the result of this arbitrage mechanism was that there was:

> a direct causal link between the amended COOL measure and the domestic price suppression losses experienced in Canada. Because of this arbitrage between markets, the price impacts for the domestic price-suppression analysis are the same as those that are used in the calculation of export revenue losses.[496]

The United States, however, brought data showing volatility between the Canadian and United States' markets and showed that such volatility was caused by causal factors other than the COOL measure.[497] These potentially confounding factors included, according to the US: economic fluctuations and recession; long-term unemployment; increased feed costs; shifts in Canadian and Mexican livestock and meat processing; shifting transportation costs; weather patterns and drought; impacts of animal disease such as bovine spongiform encephalopathy in the Canadian herd; and increased demand for meat during US holidays.[498] The United States submitted that, 'it is important to ensure that, in determining the level of nullification or impairment, trade effects attributable to a factor other than the measure at issue are not attributed to the measure at issue since that would result in an erroneous level of nullification or impairment.'[499] The arbitrators reviewed the evidence brought by both Canada and the United States and concluded that Canada's econometric model failed to account for a number of variables or potentially confounding factors.[500] In so doing, the arbitrators affirmed the importance of using a model that is able to disaggregate potentially confounding factors from the causal effect of the measure.[501] In other words, the arbitrators essentially found fault with Canada's econometric model for failing to perform an adequate non-attribution analysis prior to its causation analysis.

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[493] *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464) [5.111].
[494] ibid Annex B-1, 39.
[495] ibid.
[496] ibid.
[497] ibid [5.40].
[498] ibid [5.65].
[499] United States' opening statement at the meeting of the Arbitrator, para 28 quoted in *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464) [5.64].
[500] *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464) [5.106]–[5.110].
[501] ibid [5.106]–[5.108].

The importance that the arbitrators placed on potentially confounding factors can be seen in the way in which it decided to calculate the level of nullification and impairment experienced by Canada and Mexico. That is, in formulating the linear regression equation that it ultimately used to estimate the effect of the COOL measure, the arbitrators used 'monthly dummies' to control for seasonality; changes in the exchange rate; Canadian cattle-specific events (such as BSE) and for Canadian pigs; the closure of a hog-processing plant.[502] Additionally, the arbitrators included variables to control for changes in transport costs, the recession, changes in feed costs and the level of competing imports, drought events as well as the spread of the Porcine Epidemic Diarrhea virus.[503] Moreover, it also considered the impact of transport costs for Canada only.[504] In short, the arbitrators recognised that, in calculating the level of nullification and impairment brought about by the US' COOL measure, it also needed to take into account the effect of potentially confounding factors.

Whilst recognising the impact that potentially confounding factors might have on attenuating the causal link between the US' failure to bring its measure into conformity with a DSB ruling and the impact on Canada and Mexico's economies, the *US—COOL* arbitrators nonetheless did not perform a discreet causal analysis. Instead, the linear regression equation that it formulated sought simultaneously to: (1) establish a causal link; (2) make allowance for potentially confounding factors; and (3) quantify the level of nullification and impairment. Again, to express this symbolically, the linear regression equation would read: 'Did C cause E? To what extent do X, Y and Z mitigate the causal link between C and E? And how much is E?' On the one hand, it is positive that the arbitrators show a willingness to consider the way in which potentially confounding factors have mitigated the causal link. On the other hand, it is suggested that the linear regression equation attempts to do too much in one step. Moreover, the very way in which the equation is formulated again reflects the presumption that a causal link exists. That is, the formula is calculating the level of the effect at the same time as it analyses causation, which indicates that the notion that causation exists is a *fait accompli*. It is contended that a superior approach would involve first determining whether there is a causal link and the extent to which potentially confounding factors attenuate this link before moving, as a secondary step, to quantify the level of nullification and impairment.

The fact that many Members have raised potentially confounding factors as possibly mitigating the causal link between its failure to comply with a DSB ruling and the nullification and impairment suffered by another Member is revealing. It indicates that it is too simplistic to draw a causal link between a responding Member's failure to comply with a DSB ruling and a declining industry or economy. It has been seen that arbitrators have been receptive to the idea that potentially confounding factors can complicate this causal link and that they must therefore take this possibility into account in their calculations. It has also been seen through this survey of the jurisprudence, however, that arbitrators are yet to develop any consistent method for accommodating potentially confounding factors. It is suggested that the Tripartite Causation/Non-

[502] ibid [6.36].
[503] ibid [6.38].
[504] ibid [6.29].

Attribution Analysis might be used to fill this gap. Before turning to consider the way in which the Tripartite Causation/Non-Attribution Analysis might be used here, it remains first to consider the way in which arbitrators use a kind of counterfactual analysis in order to determine the level of nullification and impairment caused to a Member's industry.

[3.0] Causation in the Determination of Nullification and Impairment

Whilst the jurisprudence does not indicate any consistent methodology for making a determination of non-attribution or causation, arbitrators have consistently drawn on a counterfactual analysis as a means of making a determination as to the nullification and impairment of an industry. That is, arbitrators estimate the level of nullification or impairment brought about by a responding Member's failure to comply with the DSB recommendations by calculating the difference between the value of trade (if any) that took place despite the WTO-inconsistent measure over a designated time period and the value of trade that would have occurred over the same period if the other responding Member had complied with the DSB recommendation.[505] In other words, arbitrators effectively use a *sine qua non* test as a means of assessing what the value of a Member's exports would have been 'but for' the responding Member's failure to comply with the DSB ruling.

The most obvious difficulty with relying on a counterfactual in this context is the hypothetical world problem. That is, it is impossible to know with any degree of certainty what a Member's trade flows might have been had the other Member complied with the DSB ruling. This lack of certainty has a number of elements to it. First, if the responding Member were to have complied with the DSB ruling, it has a degree of choice about the way in which it implements the DSB recommendations.[506] Accordingly, there is no one prescribed manner of complying; and it follows from this that it is difficult for arbitrators to reconstruct the manner in which the non-compliant Member would have implemented the DSB recommendations, had it done so.[507] Arbitrators are simply required to choose a plausible or reasonable compliance scenario for the purpose of the counterfactual.[508] Davey suggests a potential solution:

> The complaining party should have the right to choose its preferred counterfactual, so long as it is WTO-consistent, in its initial request for retaliation authority and it should be for the respondent to come up with a plausible WTO-consistent alternative if it objects to the complainant's

[505] See, eg, *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.3]; *EC—Bananas III (US) (Recourse to Arbitration—Article 22.6)* (n 459) [7.1]; *Canada—Aircraft Credits and Guarantees (Recourse to Arbitration—Article 22.6 and Article 4.11)* (n 459) [3.21]; WTO, *European Communities: Measures Concerning Meat and Meat Products (Hormones)—Recourse to Arbitration by the European Communities under Article 22.6—Decision by the Arbitrators* (12 July 1999) WT/DS48/ARB (*EC—Hormones (Canada (Recourse to Arbitration—Article 22.6))*) [3.5]; [5.45]; [6.32].

[506] WTO, *United States—Sunset Reviews of Antidumping Measures on Oil Country Tubular Goods from Argentina—Report of the Appellate Body* (29 November 2004) WT/DS268/AB/R [184]; and *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.4].

[507] *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.4]. See also, Kym Anderson, 'Peculiarities of Retaliation in WTO Dispute Settlement' (2000) 1(2) WTR 123, 130.

[508] *US—Gambling (Recourse to Arbitration—Article 22.6)* (n 458) [3.25]–[3.27]; *EC—Bananas III (US) (Recourse to Arbitration—Article 22.6)* (n 459) [7.7]; *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.5].

> counterfactual. If the respondent can meet that burden, then the respondent's alternative should be used. That will lead to a lower level of nullification being calculated, but that is appropriate as long as the respondent meets its burden of demonstrating plausibility and WTO consistency.[509]

This would seem to be a good solution; but it has not yet been taken up in the jurisprudence. Nonetheless, the jurisprudence consistently demonstrates that the choice of counterfactual is somewhat arbitrary—even though the differences in the amounts owing due to the choice of counterfactual can be significant. This idea can be seen in the *EC—Hormones (Article 22.6)* arbitration. The original Panel proceedings involved a dispute about the EC's ban on imports of hormone-treated beef based on scientifically contentious beliefs. In order to determine the level of nullification and impairment caused by the ban, the arbitrators compared the value of beef exports under the WTO-inconsistent EC regime with the value of beef exports that would have occurred in a WTO-consistent EC import regime.[510] The arbitrators did not consider, however, that the EC might have been able to keep the import ban in place whilst imposing an adequate risk assessment. If this counterfactual had been chosen instead, it would have resulted in a different calculation as to the effect of the import ban. Similarly, in *EC—Bananas III (Article 22.6)* cases, the arbitrators selected one counterfactual from among several possible alternatives without explaining the reason for their choice.[511] As Spamann noted, it is arguable that if another counterfactual were used, the level of impairment suffered by the US could be calculated as being zero, as opposed to $191.4 million per year.[512] The difficulty involved in choosing counterfactuals for the purpose of arbitrators, then, is a clear example of the significant financial implications of the hypothetical world problem. Second, even if the arbitrators were able accurately to predict how the responding Member would have implemented the DSB's recommendations, it is still difficult to reconstruct the complainant Member's flow of trade that would follow from that implementation. Relatedly, it is difficult to know the confounding impact that potentially confounding factors would have had on trade flows if the responding Member had, in fact, complied with the DSB ruling.

A third and related difficulty concerns the selection of a suitable time-frame that the arbitrators should consider when determining the level of nullification or impairment caused by a Member's failure to comply with a DSB ruling. There is no rule in the DSU prescribing the time frame for the determination of the level of nullification or impairment, and, as such, arbitrators have some degree of discretion as to whether to consider the impact of a failure to comply with the DSB ruling on a more short-term or long-term basis. The time period ultimately chosen has implications for the kinds of considerations to be factored into the causation analysis, such as the reliability of the data for discerning a causal link and the possibility that potentially confounding factors might confound such a causal link. Past Article 22.6 arbitration decisions

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[509] Davey (n 23) 368.
[510] *EC—Hormones (US) (Recourse to Arbitration—Article 22.6)* (n 469) [42]–[43].
[511] *EC—Bananas III (US) (Recourse to Arbitration—Article 22.6)* (n 459) [7.4]–[7.7]; *EC—Bananas (Ecuador (Recourse to Arbitration—Article 22.6 and Article 4.11)*) (n 459) [166]–[67].
[512] Holger Spamann, 'The Myth of "Rebalancing" Retaliation in WTO Dispute Settlement Practice' (2006) 9 JIEL 31, 53.

suggest that the period of time for determining the level of nullification or impairment is usually the period that immediately follows the end of the "Reasonable Period of Time"—namely, the period of time that is agreed upon by the parties for the responding Member to implement the DSB ruling. The *US—Tuna (Recourse to Arbitration—Article 22.6)* raised difficult timing issues, however, because it concerned a measure (the 2013 Tuna Measure) that sought to implement the DSB ruling, but was found to do so inadequately. Accordingly, in that case, Mexico sought compensation for the nullification and impairment caused by the 2013 Tuna Measure. The arbitrators then had to decide the time period over which to assess the impact of the withdrawal of the measure. Whilst the parties agreed that the time period should be short-term,[513] they disagreed on whether the time period should be immediately following the withdrawal of the measure or in the most recent year, where the US argued that it was more appropriate to use the most recent data available.[514] Ultimately, the arbitrators decided to select the time period immediately following the withdrawal of the measure.[515] In doing so, however, the case brings attention to the fact that in some cases the time period selected is left to the arbitrators' discretion, and in this sense, is somewhat arbitrary.

All of these aspects mean that the selection of a counterfactual can be very troublesome. That said, it would seem that, regrettably, there is no obvious alternative to the use of a counterfactual in this context.[516] That is, it is difficult to conceive of a way of attempting to quantify the level of nullification or impairment in a manner that does not involve formulating a counterfactual, and the hypothetical world problem that is inherent in the use of counterfactuals is insoluble. A genuine non-attribution analysis goes a small way towards mitigating these difficulties, in the sense that it aims to disaggregate those factors that are irrelevant to drawing a causal link. Nonetheless, a non-attribution analysis is certainly not able to mitigate the problems associated with the hypothetical world problem completely. Therefore, all the arbitrators can do is simply be mindful of the fact that the hypothetical world problem is methodologically problematic, and accordingly approach the choice of counterfactual with great caution.[517]

There is one aspect of the use of counterfactuals in this context, however, which might be remedied. This is the presumption that is currently in place in the jurisprudence that the level of the nullification and impairment was 100% caused by the responding Member's failure to bring its measure(s) into conformity with the DSB ruling. That is, the way in which the test currently operates in the jurisprudence is essentially: 'but for' the responding Member's failure to comply with the DSB ruling, what would the complainant Member's industry look like? By using the counterfactual test in this way, the arbitrators are presuming that no potentially confounding factors have confused the causal link. This presumption is not just flawed in a

[513] *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.14].
[514] ibid [4.15].
[515] ibid [4.17].
[516] Davey (n 23) 367.
[517] Some of the jurisprudence already evidences a degree of caution about the selection of counterfactuals: see, eg, *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [4.2]–[4.10]; *EC—Bananas (Ecuador (Recourse to Arbitration—Article 22.6 and Article 4.11))* (n 459) [7.1]–[7.8]; *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464) [3.10]–[3.12]; *US—Gambling (Recourse to Arbitration—Article 22.6)* (n 458) [3.16]–[3.73].

conceptual sense, in that it misunderstands the multi-dimensional nature of causation. It is also at odds with other aspects of the jurisprudence in which it has been seen that arbitrators have conceded that potentially confounding factors have the potential to attenuate the causal link between a responding Member's failure to comply with a DSB ruling and a complainant Member's injured industry. To put the current approach in symbolic terms, then, this would involve asking, 'How much is E?' before even establishing that C caused E. It might be counter-argued that the arbitrators could simply readjust the amount of nullification and impairment in light of the potentially confounding factors raised by the responding Member, as is currently done in the jurisprudence. This approach, however, continues to misunderstand causation, as it essentially asks: 'How much is E? Is the effect of E mitigated by X, Y and Z?' A superior approach would instead ask: 'To what extent must C be mitigated by X, Y and Z? With X, Y and Z accounted for, may it nonetheless be said that C caused E? If so, how much is E?' This sequence of logic underlies the Tripartite Non-Attribution/Causation Analysis, which will be discussed in Sections [4.0] and [5.0] below. In short, the Tripartite Non-Attribution/Causation Analysis still requires that a counterfactual be used as a point of comparison from which the nullification and impairment must be measured. It does not, however, presume that 100% of the nullification and impairment was caused by a responding Member's failure to comply with a DSB ruling; but instead is open to the possibility that the causal link was attenuated by potentially confounding factors. The next two sections will discuss in greater detail how the Tripartite Non-Attribution/Causation Analysis might work in this context.

[4.0] Non-Attribution: The First Two Steps of the Tripartite Process

[4.1] Introduction

It has been seen in previous chapters that the Tripartite Non-Attribution/Causation Analysis involves three analytical steps.[518] These steps can be adapted to this context as follows: (1) the arbitrators must identify the specific types of nullification and impairment that have been inflicted on the affected industry; (2) the arbitrators must then disaggregate the harm brought about by the responding Member's failure to comply with the DSB ruling vis-à-vis the harm brought about by potentially confounding factors; and (3) finally, the arbitrators should determine whether there is a causal link between a responding Member's failure to comply with a DSB ruling and the nullification and impairment. It may be recalled that the first two steps are directed at performing a non-attribution analysis, while the third step relates to the causation analysis. It is suggested that it is only once these non-attribution and causation analyses are complete that the arbitrators should then turn to quantify the level of nullification and impairment incurred.

The use of the Tripartite Non-Attribution/Causation Analysis in this context has three important benefits. The first is conceptual, in the sense that it reflects a much clearer understanding of causation. That is, if arbitrators use the Tripartite Non-Attribution/Causation Analysis in this context, they are able to establish

[518] These steps have been taken from AB, *US—Wheat Gluten* (n 12) [69].

causation (instead of presuming it) before going on to then quantify the effects. To put this in symbolic language, if the Tripartite Non-Attribution/Causation Analysis were used prior to the arbitrators turning to quantify the level of nullification and impairment, the analysis would proceed as follows: 'To what extent must C be mitigated by X, Y and Z? With X, Y and Z accounted for, may it nonetheless be said that C caused E? If so, how much is E?' This makes much more sense from a conceptual point of view than skipping straight to quantifying effects before causation has even been properly established.

The second benefit of the Tripartite Non-Attribution/Causation Analysis here is that it provides greater consistency to the analysis and, therefore, also greater legal certainty. It has been seen that the jurisprudence to date has a number of inconsistencies in it. First, it has been seen that the causation analysis is only really explicitly performed when causation is *not* made out. Second, it has also been seen that arbitrators have not developed any consistent methodology for taking into account potentially confounding factors. The Tripartite Non-Attribution/Causation Analysis can go a long way towards providing greater consistency to these analyses.

The third benefit of using the Tripartite Non-Attribution/Causation Analysis in this context is a practical one. Due to the fact that the Tripartite Non-Attribution/Causation Analysis takes a quantitative approach, it is able to provide a percentage approximation of the extent to which a responding Member's failure to comply with a DSB ruling is responsible for the harm in the complainant Member's industry. This percentage approximation can then be used by arbitrators to assist in quantifying the amount of compensation payable to the complainant Member. A worked example of this will be seen in Section [5.0] below.

Despite these important benefits, the AB has never considered the way in which non-attribution and causation analyses might be applied in the context of Article 22.6 arbitrations. Self-evidently, this lack of consideration means that no arbitrators have provided any guidance as to how non-attribution and causation analyses might work in this context, in contrast to the trade remedies context discussed in Chapter II and the serious prejudice context discussed in Chapter III. Some guidance in the context of Article 22.6 arbitrations would be useful at several points in the Tripartite Causation/Non-Attribution Analysis, particularly in respect of the Qualification Analysis and the causation parts of the analysis. In the absence of this guidance, it is unfortunately necessary to speculate to some degree about how the Tripartite Causation/Non-Attribution Analysis might work.

As in previous chapters, a worked hypothetical example will be used, given the abstract nature of the above three steps. In this case, imagine that Member A has failed to bring its measure into conformity with a DSB ruling. Member B attempted to negotiate with Member A in an attempt to develop mutually acceptable compensation, pursuant to Article 22.2 of the DSU. These negotiations failed and Member B now requests arbitration under Article 22.6 of the DSU so that arbitrators might determine the level of nullification and impairment caused to Member B's cotton industry.

[4.2] The First Step of the Non-Attribution Process

It may be recalled that the aim of the first step of the non-attribution process is to separate the injuries caused by a Member's failure to comply with a DSB ruling vis-à-vis the injuries caused by potentially confounding factors. In the present case study involving Member B's adversely affected cotton industry, the arbitrators would be required to separate all of the injurious effects to Member B's cotton industry into smaller injuries. This chapter, as in Chapter II, will call these 'sub-injuries'. In this context, sub-injuries inflicted on Member B's cotton industry might include: (1) loss of productivity; (2) suppressed utilisation of capacity; (3) injury to corporate profits; (4) negative effects on cash flow etc. Again, these sub-injuries are examples only, and the nature and number of sub-injuries will differ from case to case. Figure 26 at page 159 sets out a representation of the separation of the sub-injuries. Whilst Figure 26 at page 159 represents each sub-injury to the cotton industry as being of equal size, in reality, the impact on each sub-injury might vary significantly.

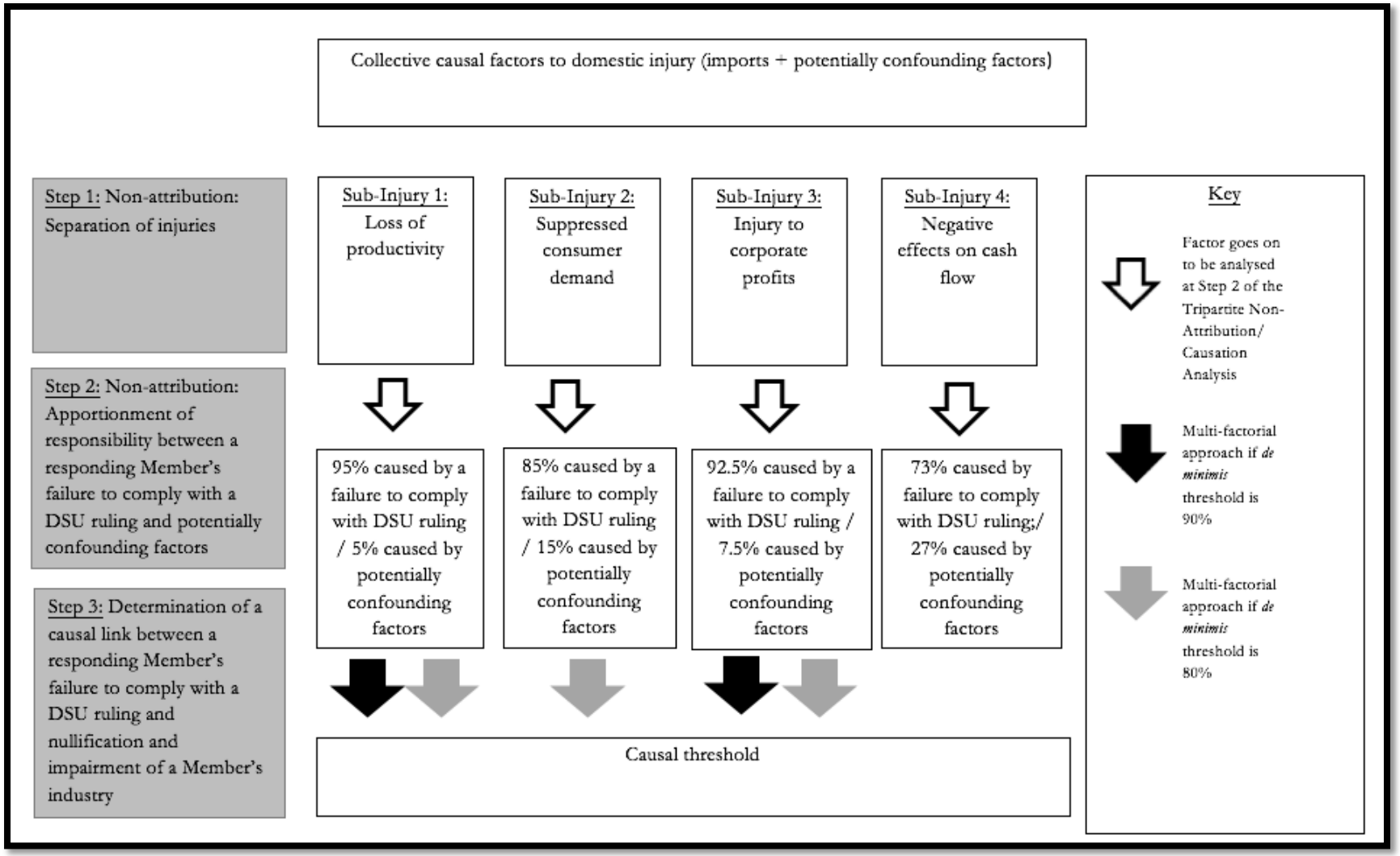

Figure 26: Overview of Steps 1, 2 and 3 of the Tripartite Non-Attribution/Causation Analysis with respect to Articles 22.6 DSU and 4.10 SCM Agreement

[4.3] The Second Step of the Non-Attribution Process

Introduction

As in previous chapters, the purpose of the second step of the non-attribution analysis in the context of Article 22.6 disputes is ultimately to apportion responsibility for the sub-injuries inflicted on the complainant Member's industry between the responding Member's failure to comply with the DSB ruling on the one hand and potentially confounding factors on the other hand. As in the other contexts discussed in this thesis, causal responsibility could be attributed to: (1) the responding Member's failure to comply with the DSB ruling alone; (2) potentially confounding factors alone; or (3) some combination of the two. Once arbitrators have apportioned causal responsibility between these groups, it is then in a position to determine which factors would qualify for inclusion in the final causation analysis.

1. Apportionment Analysis: Disentanglement Stage

The disentanglement stage involves analysing and separating the sub-injuries of a responding Member's failure to comply with a DSB ruling vis-à-vis the effects of potentially confounding factors. In order to gain data on the effects of a Member's failure to comply with a DSB ruling and the effects of potentially confounding factors, a fact-finder would need to use the same kind of counterfactual analysis that was discussed above under Section [3.0]. Whilst this counterfactual analysis brings with it the attendant difficulties associated with the hypothetical world problem that were discussed in that section, these would appear to be unavoidable as a means of assessing effects.

Moreover, the disentanglement exercise would seem to require that these effects be assessed in quantitative terms. A quantitative approach is consistent with the insistence on a quantitative approach for the nullification and impairment analyses in the Article 22.6 context. Indeed, in *US—1916 Act (Article 22.6—EC),* the arbitrators rejected the EC's request for suspension of 'qualitatively equivalent'[519] obligations.[520] The arbitrators in that case said that, in order to assess 'equivalence', it was necessary to determine the trade or economic effects of the measure in numerical or monetary terms.[521] This ruling is consistent with other arbitrators who similarly insisted on the importance of a quantitative approach.[522] Just as a determination of 'equivalence' is difficult without the use of a quantitative analysis, so, too, is it difficult to perform a genuine disentanglement of the different types of effects on the complainant Member's industry.

Using a quantitative approach would allow arbitrators to draw on those econometric approaches that have been used in the safeguards and antidumping contexts in order to separate injuries produced from trade

[519] WTO, *United States: Antidumping Act of 1916—Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision of the Arbitrators* (24 February 2004) WT/DS136/ARB [5.17].
[520] ibid [5.23].
[521] ibid.
[522] *EC—Hormones (US (Recourse to Arbitration—Art 22.6))* (n 469) [20]; *EC—Hormones (Canada (Recourse to Arbitration—Article 22.6))* (n 498) [20]; and WTO, *United States: Tax Treatment for 'Foreign Sales Corporations'—Recourse to Arbitration by the United States under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement—Decision of the Arbitrators* (30 August 2002) WT/DS108/ARB [5.46]–[5.47].

measures vis-à-vis potentially confounding factors[523] or, alternatively, any other econometric approach developed by an 'expert review group' formed under Article 13.2 of the DSU. Once the effects of a responding Member's failure to comply with a DSB ruling are separated from the effects of potentially confounding factors, the arbitrators can then turn to consider which effects should go on to be included in the final causation analysis.

2. *Qualification Analysis*

It may be recalled that the Qualification Analysis is required to determine which factors ought to qualify for consideration under the causation analysis in Step 3 of the Tripartite Non-Attribution/Causation Analysis. It may also be recalled from previous chapters that the two questions that determine the way in which the Qualification Analysis is conducted are: (1) whether the 'multi-factorial approach' should be used, or if instead, only sub-injuries produced from a responding Member's failure to comply with the DSB ruling should be included in the causation analysis; and (2) the *de minimis* threshold that a sub-injury must reach in order to be included in the causation analysis.

As in Chapter IV, there are no statements in the jurisprudence that may be drawn upon to guide how these questions should be answered. Nonetheless, it is suggested that the 'multi-factorial approach' is superior for similar reasons than those that were set out in Chapter IV—namely, that economic effects are so complex that it is unlikely that a sub-effect would be the result of one causal factor alone. Moreover, as was mentioned in Chapter III, there is a possibility that the effects of a failure to comply with the DSB ruling might actually interact with potentially confounding factors in the economy. Due to this possibility, it is perhaps artificial to insist solely that only those sub-injuries caused by a responding Member's failure to comply with a DSB ruling should qualify for inclusion in the causation analysis.

In terms of the *de minimis* threshold that might be set, once again, there is no guidance in the jurisprudence to draw upon on this point. Moreover, it may be that arbitrators would wish to retain some flexibility on this point, depending on the nature of the case at hand. Obviously, the implication of having a lower *de minimis* threshold would be that more sub-injuries would qualify for the causation analysis and therefore the likelihood of making out causation is increased. The more likely that causation will be made out, the greater the probability, in turn, that a responding Member will be required to provide compensation to the complainant Member for its failure to comply with the DSB ruling.

[523] In particular, see Prusa and Sharp (n 16) 77; and Durling and McCullough (n 181) 80; Kelly (n 16); Irwin (n 16); and Ahn and Moon (n 16) 1041–47.

[5.0] Causation: The Third Step of the Tripartite Process

The fact that arbitrators have so far simply presumed the causal link between a responding Member's failure to comply with a DSB ruling and the injury to the complainant Member's industry means that arbitrators have provided absolutely no guidance about the way in which this causal link should be drawn. Moreover, they have also failed to provide any kind of causal standard that must be reached, such as a 'genuine and substantial relationship of cause and effect' in the context of serious prejudice and trade remedies.[524] Accordingly, in the absence of any such guidance or case law that attempts to draw this causal link, it is difficult to provide any very detailed discussion of how the causal link should be drawn. It is suggested simply that future arbitrators should look to the discussion of causation in Chapters II and III and apply a similar methodology in the context of Article 22.6. Specifically, arbitrators could examine those factors that have passed the Qualification Analysis and then assess whether those factors belong to a set of factors that is collectively sufficient to cause the overall injury to the complainant Member's industry.

[6.0] Quantification of the Level of Nullification and Impairment

Arbitrators have shown a lack of consistency in their approach to quantifying nullification and impairment. For example, the earlier arbitrators sought to quantify the level of nullification or impairment by applying a counterfactual based on a relatively simple equation and simple parameters.[525] Later arbitrations have used more sophisticated models for quantifying the level of nullification or impairment, such as an economic model, in the case of *US—Continued Dumping and Subsidy Offset Act of 2000*,[526] a partial equilibrium model in the case of *US—Tuna*[527] and, in the *US—COOL* case, a linear regression analysis and a dynamic econometric model analysis.[528] It is suggested that the Tripartite Non-Attribution/Causation Analysis can help to provide greater consistency to the process of quantifying nullification and impairment.

It has already been seen that one of the benefits of using the Tripartite Non-Attribution/Causation Analysis before turning to quantify the level of nullification and impairment is that the disentanglement and qualification stages should provide arbitrators with an approximate sense of the level of nullification and impairment caused by the responding Member's failure to comply with the DSB ruling. It is suggested that this information could then be used to assist with quantifying the level of nullification and impairment brought about to a complainant Member's industry as a result of the responding Member's failure to comply with the DSB ruling. It must be noted, however, that the idea that the Tripartite Causation/Non-Attribution

[524] AB, *US—Upland Cotton* (n 245) [438] quoting AB, *US—Wheat Gluten* (n 12) [69].
[525] See, eg, *EC—Bananas III (US) (Recourse to Arbitration—Article 22.6)* (n 459) [7.8]; *EC—Hormones (US (Recourse to Arbitration—Article 22.6))* (n 469) [48]–[79]; *EC—Hormones (Canada (Recourse to Arbitration—Article 22.6))* (n 498) [44]–[68].
[526] WTO, *United States: Continued Dumping and Subsidy Offset Act of 2000—Recourse to Arbitration by the United States under Article 22.6 of the DSU—Decision by the Arbitrators* (31 August 2004) WT/DS217/ARB/BRA [3.79].
[527] *US—Tuna (Recourse to Arbitration—Article 22.6)* (n 464) [5.155].
[528] *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464) [6.27]–[6.42].

Analysis can assist with quantifying the level of nullification and impairment is premised on the idea that all of the sub-injuries have been captured. If not all of the sub-injuries have been captured, it is possible that use of the model will lead to some error.

Turning to how the model might be applied, imagine that, at the first stage of the Tripartite Causation/Non-Attribution Analysis test, the arbitrators find that the injury to the complainant Member's industry may be divided into six sub-injuries. Imagine, then, at the Disentanglement stage, the arbitrators find as follows:

1. Sub-injury 1, Loss of productivity: 95% caused by the responding Member's failure to comply with the DSB ruling; and 5% caused by potentially confounding factors;
2. Sub-injury 2, Suppressed utilisation of capacity: 85% caused by the responding Member's failure to comply with the DSB ruling; and 15% caused by potentially confounding factors;
3. Sub-injury 3, Injury to corporate profits: 92.5% caused by the responding Member's failure to comply with the DSB ruling; and 7.5% caused by potentially confounding factors;
4. Sub-injury 4, Negative effects on cash flow: 73% caused by the responding Member's failure to comply with the DSB ruling; and 27% caused by potentially confounding factors;
5. Sub-injury 5, Suppressed ability to raise capital or investments: 91% caused by the responding Member's failure to comply with the DSB ruling; and 9% caused by potentially confounding factors; and
6. Sub-injury 6, Lower return on investments: 88% caused by the responding Member's failure to comply with the DSB ruling; and 12% caused by potentially confounding factors.

Say that the arbitrators have set down a *de minimis* threshold of 80%, five of the above six sub-injuries would therefore qualify for consideration in the causation analysis. Depending on the causal standard that is chosen, it is likely that the above breakdown of sub-injuries would be sufficient to find causation between a responding Member's failure to comply with the DSB ruling and injury to the complainant Member's industry. This being the case, arbitrators then have the task of quantifying the level of nullification and impairment.

In order to make this quantification, arbitrators could proceed as follows:

1. Calculate the percentage contribution of harm that each sub-injury has made to the industry's overall injury. For instance, to take the example of Sub-injury 1 above, the arbitrators would attempt to calculate the proportion of the overall harm that was caused by Sub-injury 1 and then multiply it by 100%. This will be called 'Sub-Injury's Causal Contribution'. This step should then be repeated in relation to each sub-injury.

   Imagine that the Sub-Injury's Causal Contribution to the overall level of nullification and impairment in relation to the cotton case-study is as follows for each of the above six sub-injuries:

   - Sub-injury 1: 16%
   - Sub-injury 2: 14%

- Sub-injury 3: 19%
- Sub-injury 4: 27%
- Sub-injury 5: 8%
- Sub-injury 6: 16%

To view the breakdown of sub-injuries graphically, see Figure 27 below.

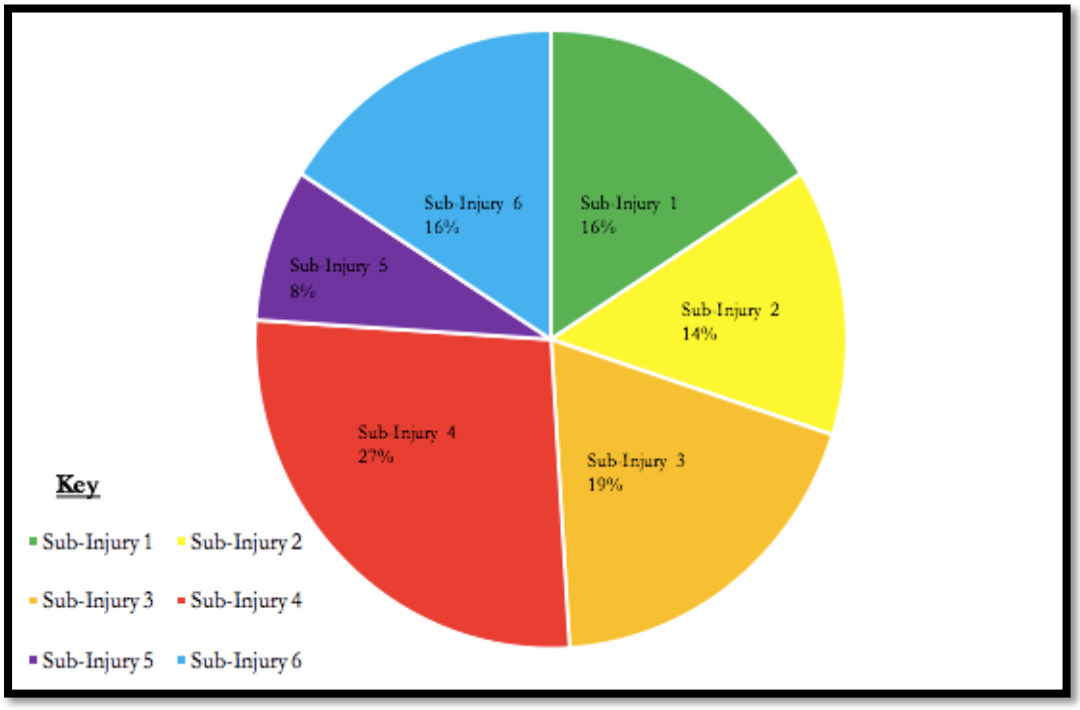

Figure 27: Sub-injury's causal contribution

2. Multiply the Sub-Injury's Causal Contribution by the percentage of causal responsibility allocated to the responding Member's failure to comply with the DSB ruling. For example, in the case of Sub-injury 1, the arbitrators would multiply the Sub-Injury's Causal Contribution found in Step 1 (ie, 16%) by 95%. Accordingly, the calculation would be 95% x 16%, which equals 15.2%. This means that, on the basis of Sub-Injury 1 alone, it is known that 15.2% of the ultimate nullification and impairment was caused by the responding Member's failure to comply with the DSB ruling. This new percentage will be called the 'Proportionate Contribution by Sub-Injury'. This step should be repeated in relation to each sub-injury. For the avoidance of doubt, those sub-injuries where the causal contribution to the sub-injury as a result of the failure to comply with the DSB ruling is less than the *de minimis* threshold of causation (in this case, say, 80%) should still be included in the calculation.

The 'Proportionate Contribution by Sub-Injury' for each of the above Sub-Injuries is as follows:

- Sub-injury 1: 15.2%
- Sub-injury 2: 11.9%
- Sub-injury 3: 17.575%
- Sub-injury 4: 19.71%
- Sub-injury 5: 7.28%
- Sub-injury 6: 14.56%

3. Once Step 2 above has been repeated in relation to all of the sub-injuries, it is then possible to add together all of the percentages representing the 'Proportionate Contribution by Sub-Injury'. This will then give the fact-finder the percentage contribution that the responding Member's failure to comply with the DSB ruling made to the overall injury. This percentage will be called the 'Percentage Contribution to the Overall Injury'. In this particular case-study, the Percentage Contribution to the Overall Industry is 86.295%.

4. Once the arbitrators have calculated the 'Percentage Contribution to the Overall Injury', it is possible to calculate the amount of compensation payable by multiplying the total amount of nullification and impairment to the industry by the 'Percentage Contribution to the Overall Industry'. This would then give the arbitrators the amount of compensation that the responding Member should pay to the complainant Member as a result of its failure to comply with the DSB ruling. So, for example, say that the total amount of nullification and impairment to the complainant Member's industry was $300 million. The amount of compensation that the responding Member would need to pay as a result of its failure to comply with the DSB ruling is $300 million x 86.295%, which equals $258,885,000.

[7.0] Conclusion

The concepts of causation and retaliation are inextricably linked. It has been seen that this linkage is envisaged in a number of the provisions of the WTO's covered agreements. Most obviously, Article XXIII:1 of the GATT 1994 directs arbitrators to quantify the complainant's level of nullification and impairment that was actually 'a result of (…)' the responding Member's failure to bring its measure into conformity with the DSB ruling, which clearly suggests causation. Article 22.4 DSU, moreover, provides that suspended retaliatory measure must be 'equivalent' to the nullification or impairment of benefits that the measure has caused, or 'appropriate', in the case of Article 4.10 SCM Agreement. These notions of 'equivalence' and what is 'appropriate' would also seem to require that any assessment must take into account the level of injury caused.

Despite these conceptual and textual linkages, the jurisprudence indicates that the arbitrators have shown a consistent lack of engagement with the analysis of both non-attribution and causation. Instead, they have seemingly just presumed the existence of the causal link between a responding Member's failure to comply with a DSB ruling and the complainant Member's level of nullification and impairment. Indeed, it would seem that the existence of the causal link is only explicitly considered by arbitrators when it *cannot* be made out. Whereas Article 3.8 DSU allows ordinary Panels to presume a causal link between a breach of the covered agreements and nullification and impairment, arbitrators are not entitled to continue to make such a presumption in the context of arbitrations concerning Articles 22.6 DSU and 4.10 SCM Agreement. Moreover, the arbitrators are yet to consider, in any systematic manner, the way in which potentially confounding factors might confuse the causal link, despite the fact that the jurisprudence indicates that responding Members have consistently raised the need to consider potentially confounding factors.

This chapter has proposed that the Tripartite Causation/Non-Attribution Analysis might be used to address some of the analytical problems that currently exist in the jurisprudence. Using such a methodology arguably supports a more coherent vision of causation, in which causation is established prior to a calculation of nullification and impairment. Moreover, at a practical level, it has been seen that the data that is obtained from the Tripartite Causation/Non-Attribution Analysis can be used to assist with the quantification of nullification and impairment. One of the final implications of conducting a more rigorous non-attribution analysis is that potentially confounding factors may be found to mitigate the causal link between the responding Member's failure to comply with the DSB ruling and the resulting nullification and impairment. It follows from this that it is likely that a responding Member would be required to pay less compensation to the complainant Member than it would if a non-attribution analysis had not been undertaken. This lesser amount, however, is more likely to be a more accurate reflection of the amount of nullification and impairment caused by the responding Member's failure to comply with the DSB ruling.

Conclusion

[1.0] Restatement of Thesis

This thesis opened with a quotation from David Hume, who said:

> There is no question, which on account of its importance, as well as difficulty, has caus'd more disputes both among antient and modern philosophers, than this concerning the efficacy of causes, or that quality which makes them be follow'd by their effects.[529]

Not only has this study confronted the question of determining causation in respect of certain provisions of WTO law, but also how to precede this examination of causation with an effective non-attribution analysis. In other words, the particular type of causal analysis that has been at the heart of this thesis has had a dual character—namely, the question of not only how to draw a causal link between two factors, but also the question of how to exclude causation between an effect and potentially confounding factors. In this sense, the causal analysis with which this thesis has been concerned has both positive and negative features to it.

This thesis has identified six different parts of WTO law where a non-attribution and causation analysis is explicitly required or in which they might be implied. These include: (1) Safeguard measures (Articles 2.1 and 4.2(a) and (b) of the Safeguards Agreement); (2) Antidumping measures (Articles 3.1 and 3.5 of the AD Agreement); (3) Countervailing duties (Article 15.5 of the SCM Agreement); (4) Serious prejudice (Articles 5(c) and 6.3 of the SCM Agreement); (5) the relationship between a measure and its policy objective (Articles XX GATT and XIV GATS); and (6) the relationship between a responding Member's failure to comply with a DSB ruling and the complainant Member's level of nullification and impairment (Articles 22.6 DSU and 4.10 SCM Agreement). The Tripartite Non-Attribution/Causation Analysis has been put forward as the best methodology for performing the non-attribution and causation analyses in these parts of WTO law.

Whilst the basic steps of the Tripartite Non-Attribution/Causation Analysis are broadly applied in the same way across each of the chapters, the purpose of performing the non-attribution and causation analyses varies with each chapter. In Chapter II, the purpose is to make a determination as to whether Member B has injured the industry of Member A to such an extent that Member A is justified in implementing trade remedies. Chapter III is concerned with determining whether Member B's subsidised products have caused negative effects to Member A's trade interests. In Chapter IV, the objective of the analysis is to determine the effect of a measure on a policy objective. Finally, the aim of the non-attribution and causation analyses in Chapter V is to determine the level of nullification and impairment that Member B has caused to Member

[529] Hume, *An Enquiry Concerning Human Understanding* (n 1) Book I, Section xiv, 206.

A's industry. In one sense, it could be said that Chapters II, III and V all involve some kind of economic harm to a Member (whether realised or potential), whereas Chapter IV is the only chapter that is concerned with the causal contribution of a measure to a policy objective. This difference is a manifestation of the fact that Chapter IV is the only chapter in this thesis (of those that discuss WTO law) that draws on causation for its explanatory and even predictive potential, rather than its attributive qualities.

[2.0] Current Jurisprudence

In the process of putting forward the Tripartite Non-Attribution/Causation Analysis, this thesis has examined the current approach to analysing non-attribution and causation in the jurisprudence in the six identified areas of WTO law. In so doing, it has identified a number of conceptual problems in the current jurisprudence. One of the most fundamental problems with the current jurisprudence is that it consistently reflects a tendency to attempt to derive an effect from the nature of its supposed cause. Indeed, Hume's warning against doing so was repeated in Chapters III, IV and V, where the tendency manifested in each.

Taking Chapter III first, it was seen that there are two approaches to performing the non-attribution and causation analysis in relation to a determination of serious prejudice under the SCM Agreement—namely, the unitary approach (which requires determining the cause and effect of a subsidy together in one step) and the bifurcated approach (which requires analysing the cause and effect of a subsidy separately in two steps). It was argued that the unitary approach is premised on a failure to recognise cause and effect as separate phenomena, and a misconception that an effect may be knowable *a priori* through analysing its cause. It is for this reason, that this thesis preferred the bifurcated approach. Moreover, the jurisprudence in Chapter III also uses what is essentially the 'breaking the causal link' approach, which is as problematic in the context of serious prejudice as it is in the context of trade remedies. Similarly, in Chapter IV, when tasked with interrogating the effect of a measure on a policy objective, Panels and the AB have tended to look at the design and nature of the supposed cause in order to make conclusions about its impact on a policy objective. In so doing, Panels and the AB have resisted the idea of quantifying the effects of a measure by using real-world data. Finally, in Chapter V, arbitrators have tended to presume the causal link between a responding Member's failure to comply with its DSB ruling and a complainant Member's nullification and impairment. This presumption of a causal link, then, involves inferring the effect simply from examining the nature of its supposed cause.

In a related vein, another problematic feature of the current jurisprudence is a preference for non-quantitative data over quantitative data at several points. That is, the jurisprudence holds in several cases that a determination about injury or causation may be made using either quantitative or non-quantitative data; but then precedes only to use non-quantitative data. This can be seen, most obviously, in relation to analysing the relationship between a measure and its policy objective under the General Exceptions. It was seen in Chapter IV that the AB has held that a determination as to the effectiveness of a measure may be

made using both quantitative and non-quantitative evidence.[530] To date, all of the relevant Panels and the AB have relied on non-quantitative evidence in making the determination. Moreover, in every case in which a Member has argued in favour of quantifying the effects of a measure, the argument has been rejected.[531] In effect, then, the jurisprudence has shown a reluctance to embrace the use of quantitative data for determining the impact of a measure on a policy objective, despite the fact that quantitative data would be more reliable.

Similarly, in the context of a determination of serious prejudice under Chapter III, it was seen that the Panel and AB in *US—Cotton* explicitly held that a serious prejudice analysis does not require a subsidy to be quantified.[532] Moreover, none of the Panels or the AB have sought to use a quantitative approach for performing the non-attribution analysis required in relation to a determination of serious prejudice. As was argued in Chapter III, it would seem nonsensical to engage in a non-attribution analysis that does not use quantitative data because the use of non-quantitative data does not allow a fact-finder to determine the *interaction* between subsidies and other potentially confounding factors in any meaningful way, leading to a non-attribution analysis that is tokenistic. Indeed, the Panel in *EC—Countervailing Measures on DRAM Chips* actually made this point in relation to the importance of the use of quantitative data for a non-attribution analysis in relation to countervailing measures:

> In our view, it does not suffice for an investigating authority merely to 'check the box'. An investigating authority must do more than simply list other known factors, and then dismiss their role with bare qualitative assertions, such as 'the factor did not contribute in any significant way to the injury', or 'the factor did not break the causal link between subsidized imports and material injury.' In our view, an investigating authority must make a better effort to quantify the impact of other known factors, relative to subsidized imports, preferably using elementary economic constructs or models. At the very least, the non-attribution language of Article 15.5 requires from an investigating authority a satisfactory explanation of the nature *and extent* of the injurious effects of the other factors, as distinguished from the injurious effects of the subsidized imports.[533]

In sum, the jurisprudence reflects a reluctance to embrace quantitative data, even in situations that make little sense without it. In part, this may be because Panels and the AB feel uncomfortable with quantitative data and econometric methods. This would seem to be a weak argument, however, since it has been seen that the jurisprudence has used econometric tests in analysing other parts of WTO law.[534] Moreover, Panels have the authority under Article 13.2 DSU to establish 'expert review groups' which can be convened for the purpose of handling the quantitative data that is required for a genuine non-attribution analysis (in all of the forms that this thesis discusses), or establishing the impact of a measure on a policy objective, for the purposes of the General Exceptions in Chapter IV. Finally, and most fundamentally, a reluctance to

[530] AB, *Brazil—Retreaded Tyres* (n 379) [146]; Appellate Body, *EC—Seal Products* (n 379) [5.215].
[531] AB, *US—Gasoline* (n 378) p 21; Panel, *Brazil—Retreaded Tyres* (n 379) [7.116]; and Panel, *China—Rare Earths* (n 401) [5.113].
[532] Panel, *US—Upland Cotton* (n 242) [7.1171] and AB, *US—Upland Cotton* (n 245) [467].
[533] Panel, *EC—Countervailing Measures on DRAM Chips* (n 132) [7.405] (emphasis original).
[534] See, eg, Panel, *US—COOL* (n 433) [7.455]–[7.564]; and see generally, *US—COOL (Recourse to Arbitration—Article 22.6)* (n 464).

use quantitative data potentially results in an analysis that totally misconceives causation, thereby defeating the purpose of the entire exercise.

[3.0] Contribution of this Thesis to the Field

The contribution of this thesis to the field is, first, to identify those parts of WTO law in which non-attribution and causation analyses are explicitly required, or in which they might be implied. Second, the thesis analyses the current approach in the jurisprudence to analysing non-attribution and causation for the six parts of WTO law identified above and observes some analytical flaws with the current analysis. Finally, this thesis has taken up the three-step process for analysing non-attribution and causation in respect of the Safeguards Agreement that was set out by the AB in one paragraph of *US—What Gluten,* detailed how such a methodology might work in practice as an alternative to the current approach and then applied it to each of the six parts of WTO law that have been identified as benefitting from it.

Whilst the Tripartite Non-Attribution/Causation Analysis is employed to a different end in each chapter, the benefits that it brings to each are the same—namely, a more systematic approach, a genuine non-attribution analysis and concomitant consistency and legal certainty. An examination of the jurisprudence throughout this thesis has shown that, in the absence of the Tripartite Non-Attribution/Causation Analysis, the analysis of non-attribution and causation is often ad hoc and inadequate. In Chapter II, for example, it was seen that the non-attribution and causation analyses that are necessary for implementing trade remedies are performed by a domestic competent authority, and is therefore left to some extent to the discretion of the domestic competent authority of the Member in question. This has tended to result in a patchwork of different approaches and a lack of transparency between Members. In relation to Chapter III, the jurisprudence sometimes uses a unitary approach to causation (that is, where the cause and effect of a subsidy should be determined together in one step) and sometimes it takes a bifurcated approach (where cause and effect are determined separately). It was seen that the jurisprudence also engages in a non-attribution analysis that is frequently inadequate and tokenistic. Chapter IV discussed the way in which the jurisprudence has not used any consistent approach to interrogating the effect of a measure on a policy objective and that a number of vague, non-quantitative descriptors have been used to describe the level of contribution that a measure makes to a policy objective, without any indication as to what the discrepancy between these descriptors signify. Finally, Chapter V considers the *ad hoc* way in which arbitrators have taken account of potentially confounding factors and their impact on the causal link between a failure to comply with a DSB ruling and the resulting nullification and impairment. It has been suggested that the Tripartite Non-Attribution/Causation Analysis would assist with providing greater consistency in each of these cases, and such consistency would also bring greater legal certainty to Members.

The difficulty and complexity of causation has been acknowledged at several points throughout this thesis. Causation in WTO law is arguably even more complex than many other areas of law because it is interested

in causation not only for its attributive potential, but also for its explanatory and predictive ones (as was seen in Chapter IV). Moreover, it is required to grapple with something as difficult as international trade flows and financial markets, which brings with them many potentially confounding factors. For this reason, excluding irrelevant factors is just as important in determining causation as drawing positive links between factors. The six parts of WTO law that were discussed in this thesis are all diverse and varied in nature and purpose; and yet this thesis has argued that the causal relationship that is at the heart of each of them may be analysed using the same basic process. To this end, the Tripartite Non-Attribution/Causation Analysis represents a means of systematising otherwise very different parts of WTO law, and providing their analysis with a rigour, a clearer conception of causation and a cohesion that is presently absent from the jurisprudence.

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